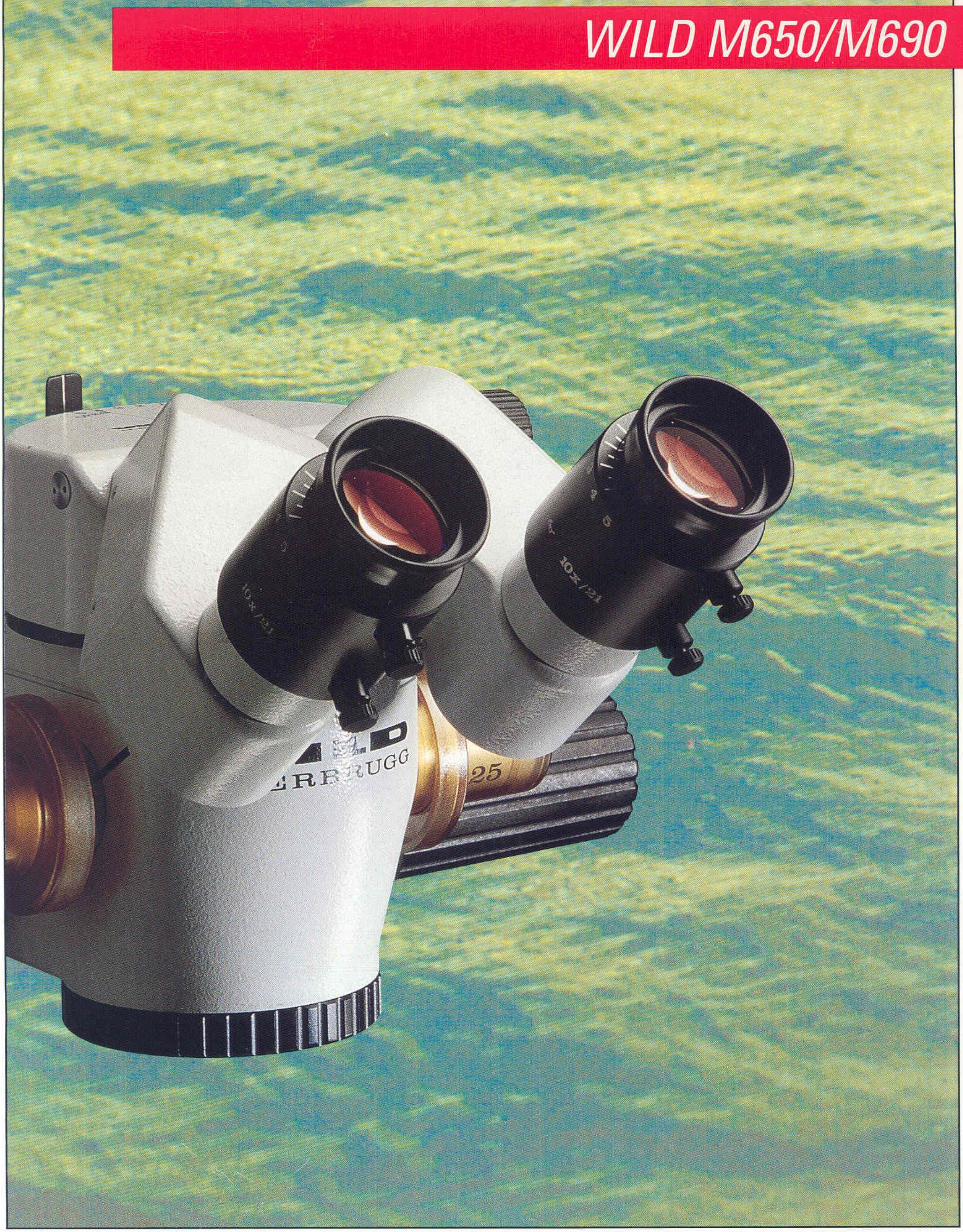
WILD M650/M690


WILD
HEERBRUGG
25
10x/21
10x/21

Manual and zoom surgical microscopes
for all microsurgical disciplines

Leica

DLA120-92-R-0646

NSN 6515-01-335-9383(W)

Microscope, Surgical - Binocular Multi-Disciplinary

(Wild M650 Operating Microscope)

Table of Contents

1. Specifications Cover Letter
2. Product Literature
3. Price List
4. Instructions for Use
5. Training Manual
6. Data Items
7. Service Manual
8. Spare Parts Manual

ACCU Beam®
TTI MEDICAL

September 4, 1992

DLA, Defense Personnel Support Center,
2800 South 20th Street,
P.O. Box 8419,
Philadelphia, PA 19101-8419

Attn: Gloria Zuccarello, Purchasing Agent

Dear Ms. Zuccarello:

We are pleased to submit the enclosed offer to your solicitation DLA120-92-R-0646 for a multiple surgical microscope procurement.

The surgical microscope in our offer is the Wild Leitz M650. The Wild Leitz M650 surgical microscope as bid is in full compliance with your required specifications. Below we will address each specification in detail and demonstrate that in each and every case, the M650 meets or exceeds the listed specifications in NSN: 6515-01-335-9383.

1. Offer

1.1 Our offer includes the Wild M650 surgical microscope with a reusable container. The reusable container will be supplied by:

Hardigg Industries, Inc.
PO Box 201,
North Main Street,
South Deerfield, MA 01373

Hardigg Industries, Inc. will act as a subcontractor to TTI MEDICAL and has confirmed full compliance to the required military specifications of a reusable container for the Wild M650 surgical microscope. The cost of the reusable container is included in the bid price for items 0001AA and 0002AA.

2. Salient Characteristics:

2.1 Coaxial Fiber Optic Illumination: The Wild M650 exceeds this specification with high intensity direct focus halogen illumination. The illumination level of direct focus illumination exceeds that of fiber optics. The illumination is coaxial and features a built-in spare lamp mounted in a quick change lamp slider. The light control has a two position brightness control with a dimmer switch.

2.2 Interchangeable Objectives: The Wild M650 features interchangeable objectives in focal lengths of 175,250,300 and 400. The Wild M650 lenses have multi-layer broad band, anti-reflective coatings.

2.3 Three Step Mag Changer: The Wild M650 has a 5 step mag changer.

2.4 Straight & 0-180 degree Inclinable Binocular: The Wild M650 has both a straight binocular and 0-180 degree binocular (f160mm).

2.5 Interpupillary Adjustment Range 55-75mm: The Wild M650 is in compliance with this requirement.

2.6 10X Eyepieces: The Wild M650 is in compliance with this requirement.

2.7 Fine Focus Control 10mm: The Wild has a fine focus control that exceeds the specified range of 10mm.

2.8 Field of View 40mm at a 175mm Focal Length: The Wild M650 has a field of view greater than 40mm.

2.9 Sterilizable and Removable Maneuvering Handles: The Wild M650 is in compliance with this requirement.

3.0 Floor Stand: The Wild M650 floor stand is in compliance with the required specifications.

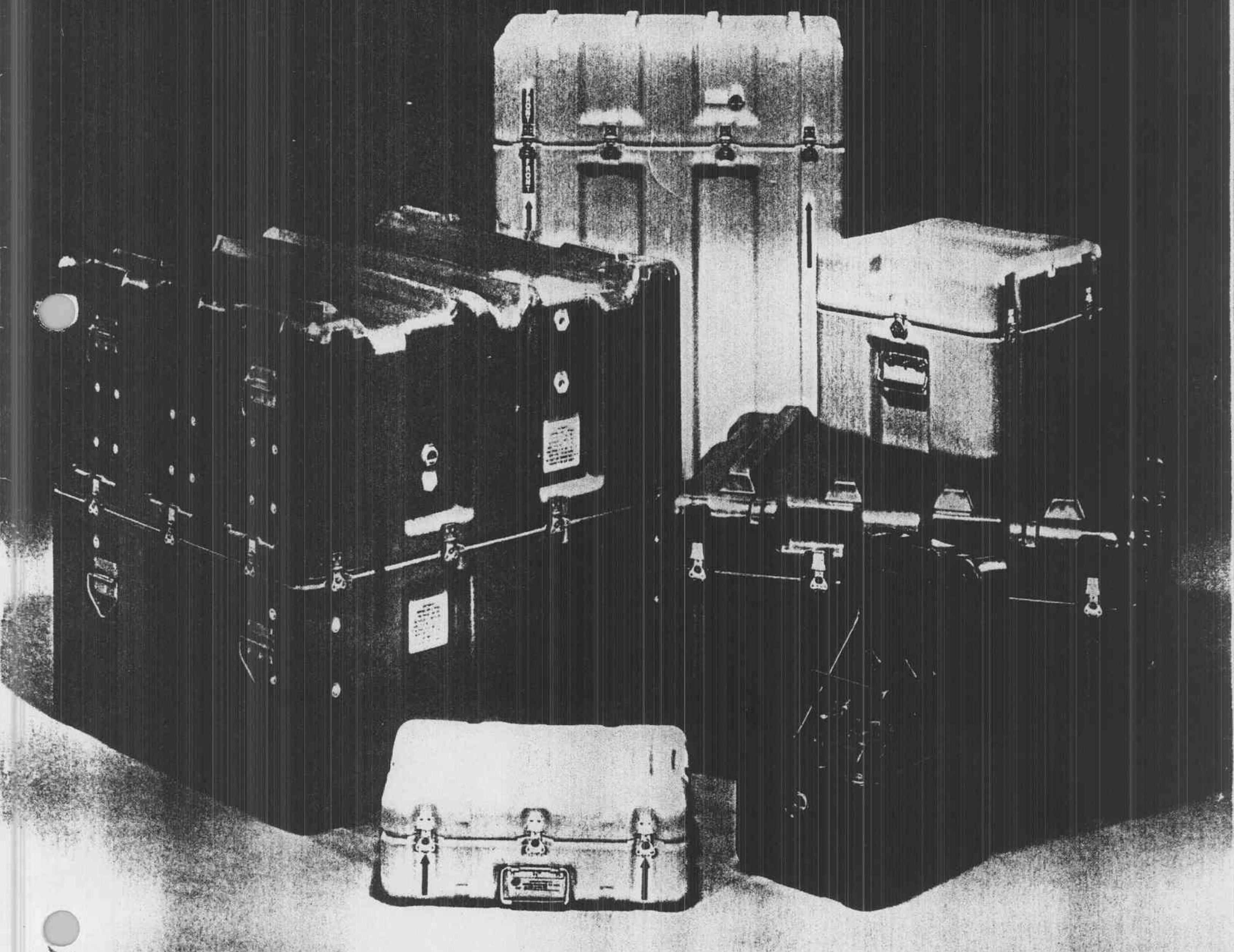
The above specification analysis of the Wild M650 system demonstrates that the Wild M650 either meets or exceeds the specifications called for in solicitation DLA120-92-R-0646.

Thank you for considering our proposal and please give me a call should you have any questions.

Sincerely,

Allen R. Howes
President

PROTECTION BY DESIGN

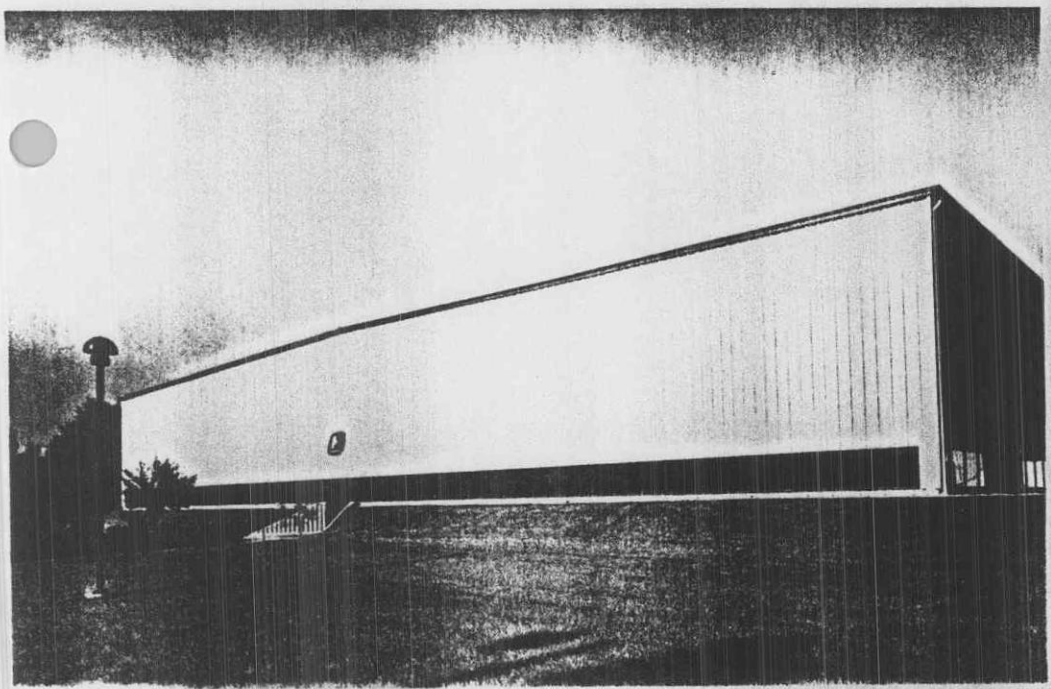

FRONT
FRONT

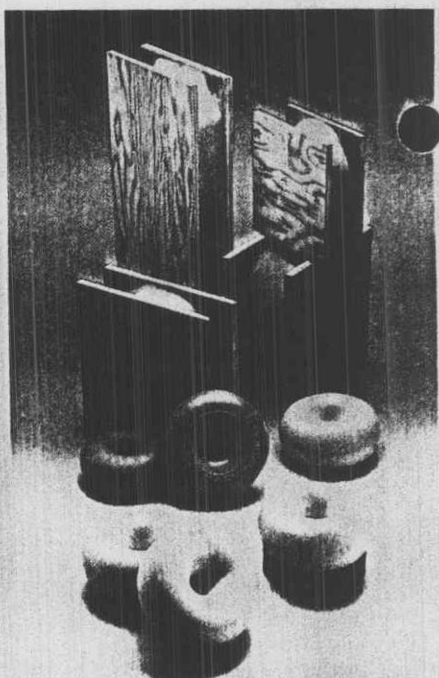
Once, product protection during shipping was hit-or-miss and cumbersome. Seeing ways to do the job better, Hardigg Industries began making foam and package cushioning products in 1955. Success brought growth, and in 1962 the privately-held company moved to an 8400 sq. ft. facility in South Deerfield, Massachusetts.

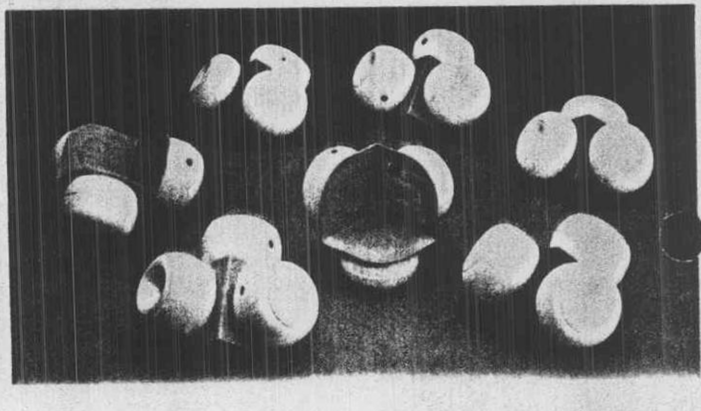
Today, Hardigg employs over 200 people and has 200,000 sq. ft. of manufacturing, engineering, research and development, and office space. The company is dedicated to turning out the most cost-efficient and reliable shipping-protection products while advancing the technology through R&D, testing, and engineering.

Hardigg shipping-protection products skillfully combine polymer and technology to achieve maximum durability. They include: Skid-Mate® and Skid-Mate+Plus™ cushioned pallet feet, Corner-Mate® carton cushions, and Multi-Directional Pallet Cushions. Hardigg Reusable Containers were introduced in 1969.

A WELL-EARNED REPUTATION FOR RELIABILITY AND EXPERTISE.

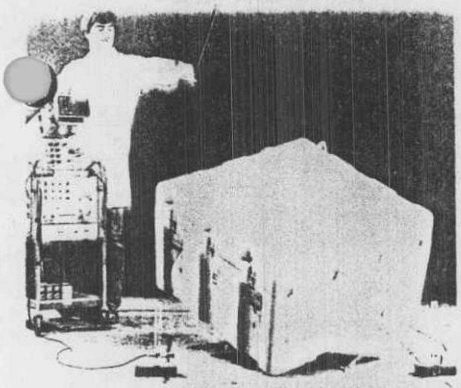


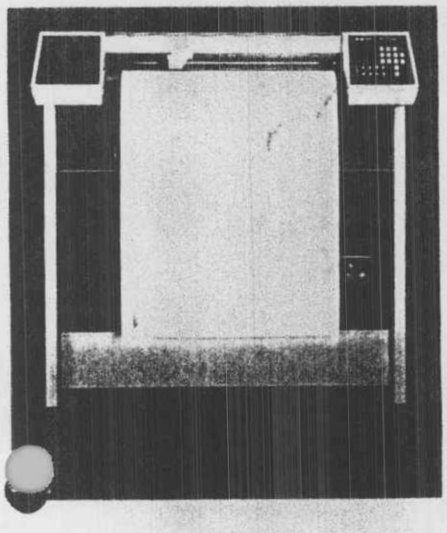


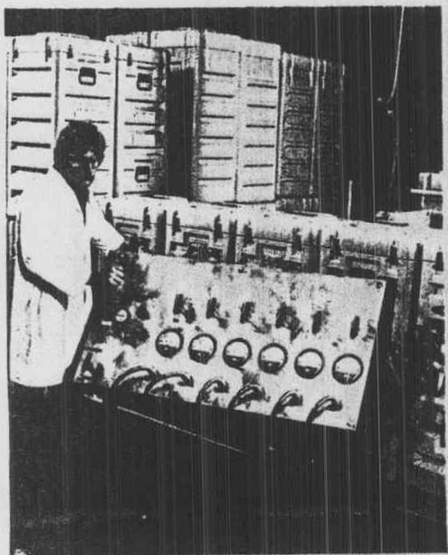


They have evolved into a line with more than 130 standard sizes plus a limitless range of custom sizes and configurations.

The skillful, knowledgeable Hardigg staff understands the need for reliability and cost-efficiency in commercial, military, and aeronautical shipping-protection specifications. Hardigg's computerized design and engineering facilities are among the most advanced in the United States, and our complete, on-site manufacturing capabilities include: mold making, tooling, metal working, suspension-system fabrication and assembly. Hardigg's complete, in-house facilities also assure prompt, reliable service and maximum quality control in the production of its high performance products. In short, *Protection By Design.*





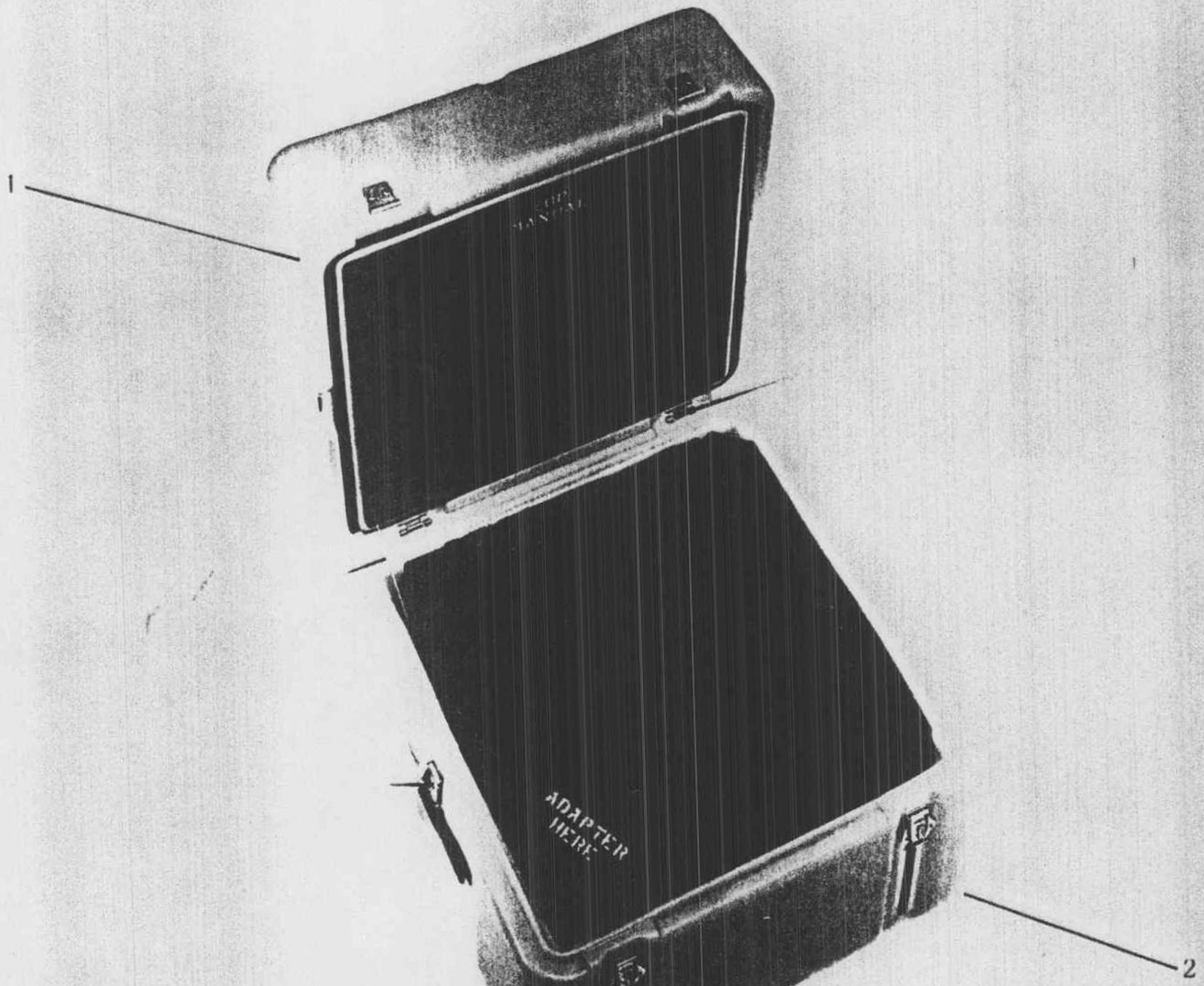


Each Hardigg Reusable Container is rotationally molded from a special formulation of polyethylene for high impact strength, and outstanding resistance to high and low temperatures. This construction also provides containers that are resistant to fungus, water, solvents, and abrasion. Result: Durable containers that provide a maximum life cycle in all environments.

Hardigg's shock-mitigation systems are custom-designed and fitted to match individual requirements. A broad selection of systems includes foam cushioning as well as suspension decks for product protection.

1. Rugged, one-piece, seamless case body and lid construction
2. Non-collapsing corners are 15 to 20% thicker than the container walls for added durability and shock resistance
3. Recessed hardware throughout prevents damage and snagging

HARDIGG REUSABLE CONTAINERS PROTECT AGAINST SHIPPING DAMAGE.



[illegible] Multiple recessed hinges
5. Cable lid retainer
6. Positive-lock ribs top and bottom permit stacking of same size units
7. Molded-in corrugations provide stacking strength
8. Full handgrip, spring-loaded handles
9. Wing-turn latches hold securely, won't jam fingers
10. All labeling is recessed
11. Container sides have minimum draft
12. Integrally molded, gasketed parting line assures positive seal after rough handling
13. Anti-shear stops on parting line at each latch and hinge point
14. Standard hardware is plated for maximum weatherability
15. Latches and hinges are riveted to molded-in metal inserts for greater attachment strength

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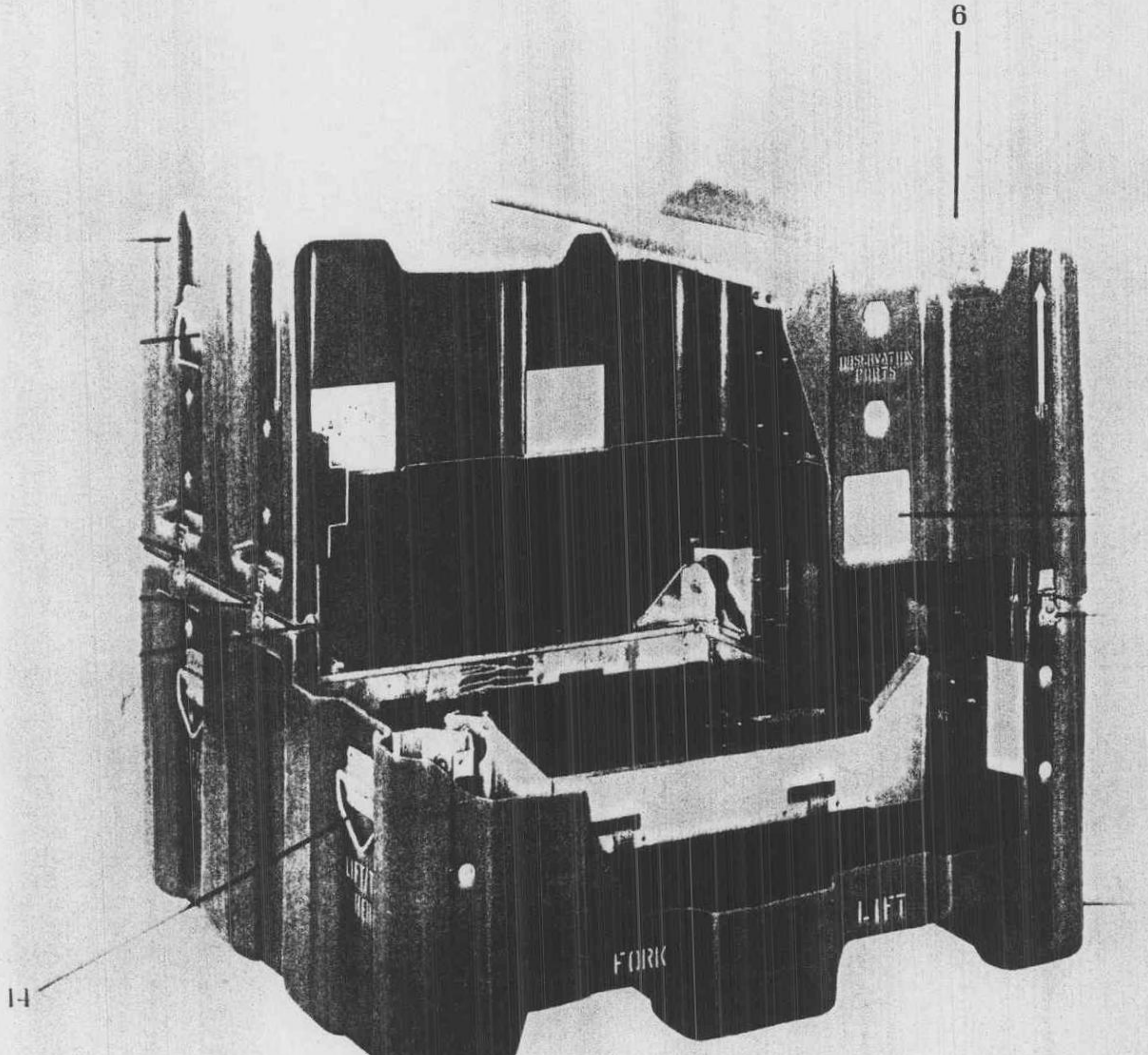
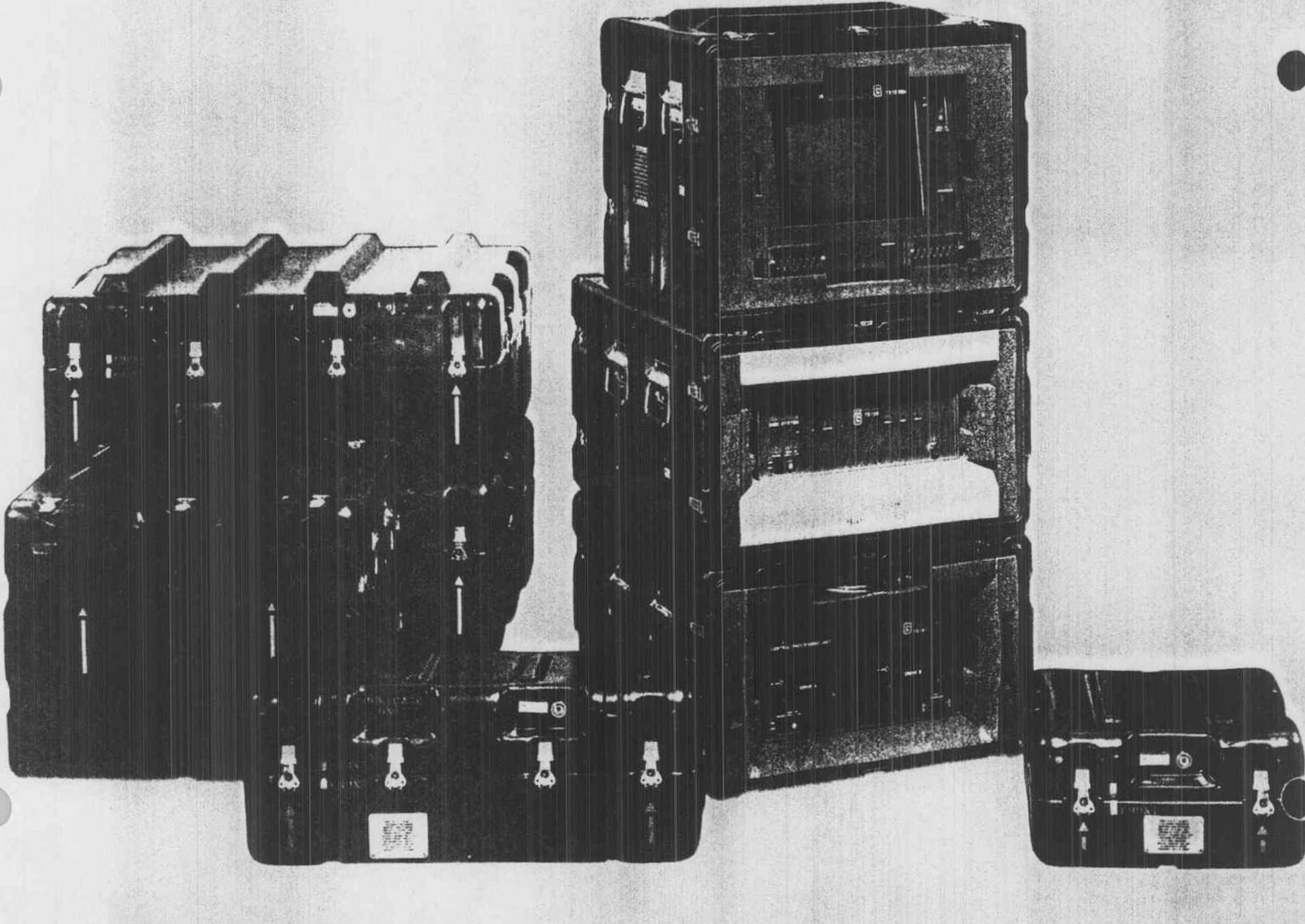


Hardigg Reusable Containers excel in protecting and preserving shipments of a wide range of military equipment including delicate and precision instruments. To date, these rugged containers have been deployed for over two million round trips worldwide to supply depots, flight lines, field exercises, and ships at sea. They offer low maintenance costs while preserving equipment from the hazards of weather, CBR* contaminants, transport, handling, and storage. It's a record of proven performance that meets Military Specification requirements.

Hardigg Containers also provide maximum cost efficiencies when it comes to transportation and handling charges. In an actual Life-Cycle Cost evaluation, a Hardigg container program saved a projected $1,185,000.

A. This custom-designed, rectangular Hardigg container was developed for shipboard storage and handling of a special, naval-airborne, ordnance item. Its space-saving dimensions provide ease of handling in confined areas.

HARDIGG REUSABLE CONTAINERS PROVIDE MILITARY SHIPPING SOLUTIONS.

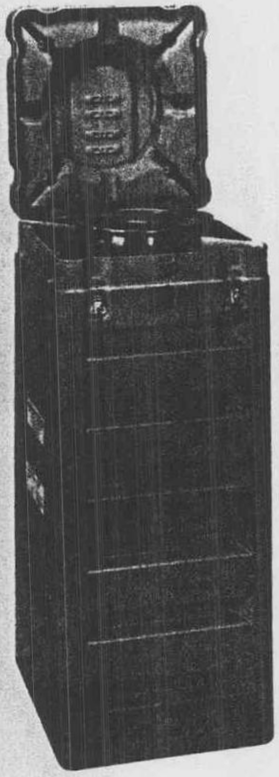


B. Field computer equipment must withstand rough, hurry-up handling en route to field deployment, yet be in complete functional condition once there. The gasketed tongue-and-groove parting line seals out dust, dirt, and moisture.

C. This atmospheric pollution/contamination monitor case utilizes double-wall construction with the inner wall conforming to the monitor. The flexibility of the inner wall precludes both the need for and cost of additional internal cushioning. The case material and stainless steel fasteners are able to withstand harsh CBR* cleaners.

D. Fast packing and unpacking were requirements for deployment of this Auxiliary Power Unit (APU) container. Hardigg developed a shock-mounted cradle design featuring quick-release fasteners. Individually-molded skids are attached to the container body, so its integrity will not be destroyed if the skids are damaged.

A



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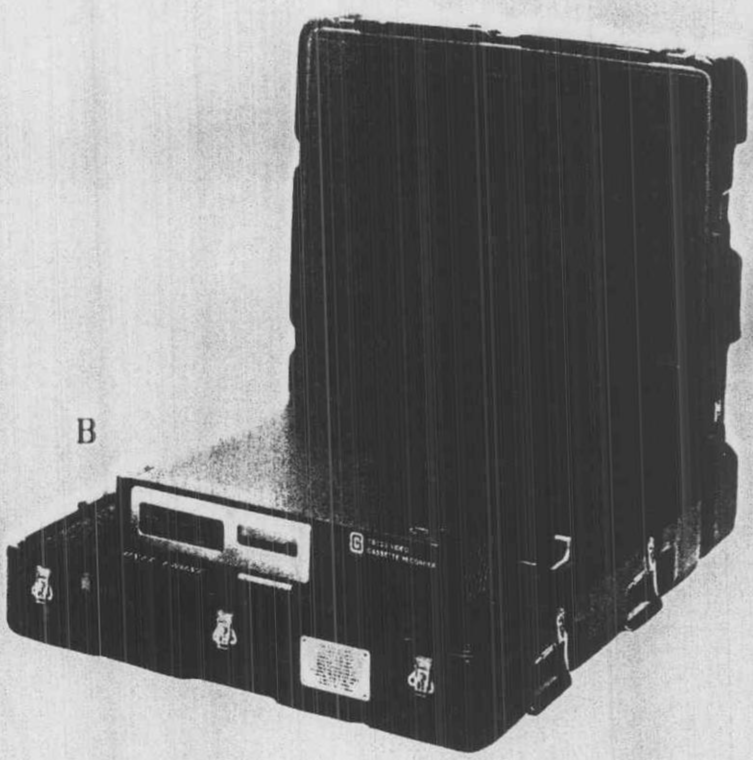

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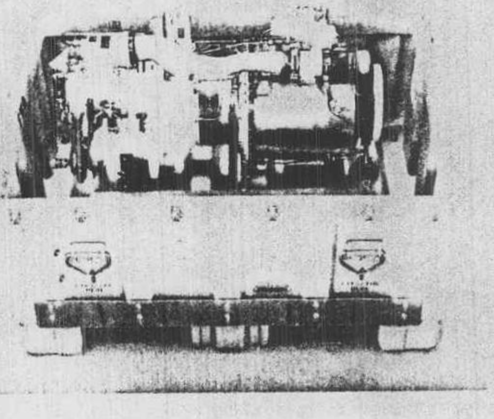

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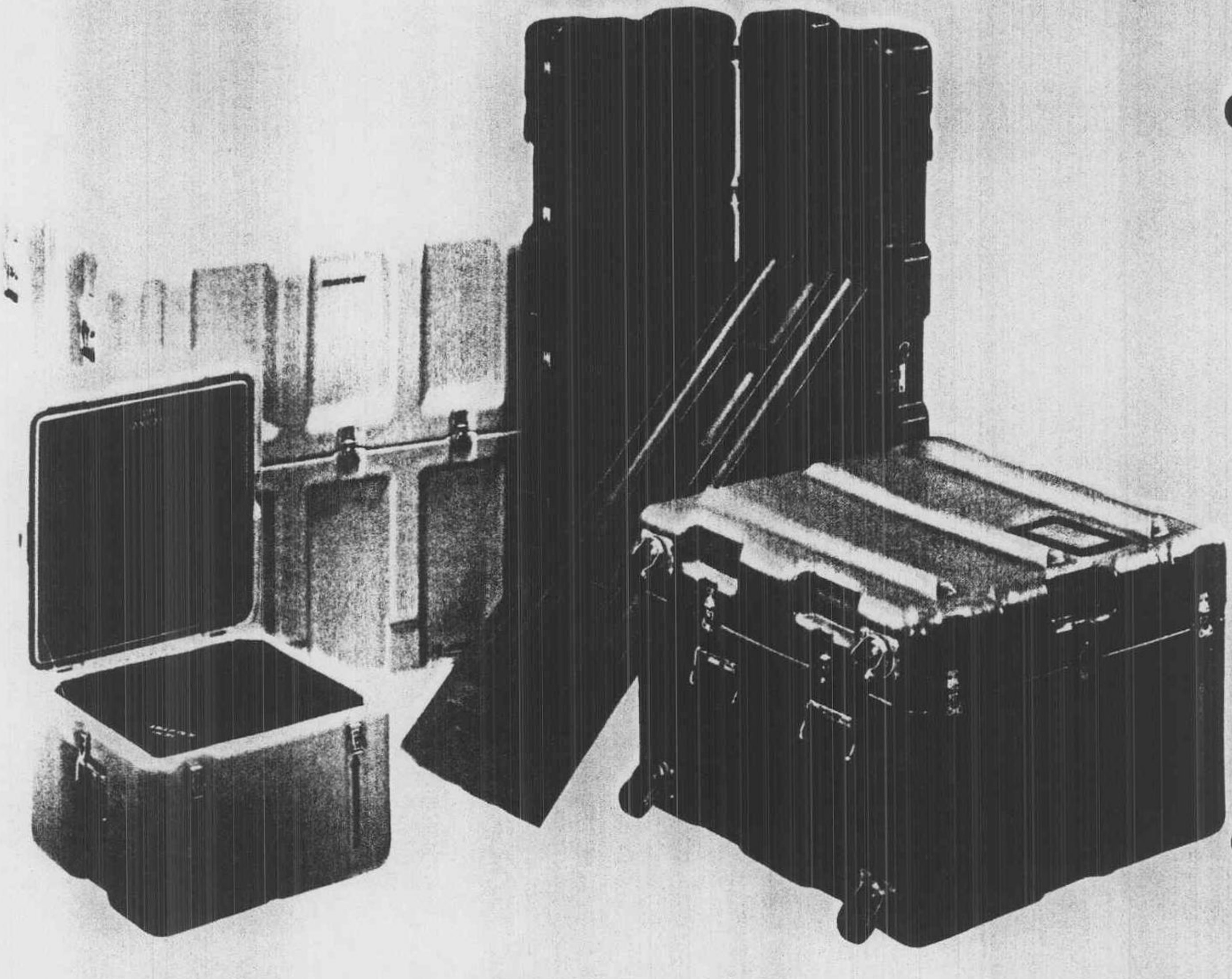
*Chemical, biological, radiological

Shipping fragile, delicate, or sensitive products can be like sending them through a house of horrors. Sudden shocks can generate smashing G-forces. Mechanical vibrations can scramble sensitive components. That's why users worldwide depend on the unique design features of Hardigg Reusable Containers for maximum shipping protection under a wide range of conditions.

The custom-designed interiors of Hardigg containers minimize shock forces and damp out vibration. Also, because Hardigg has worked out thousands of successful container/cushion designs, you can be sure that the combination developed will protect *your* product. It all adds up to *Protection By Design* that takes the potential problems out of product shipping.

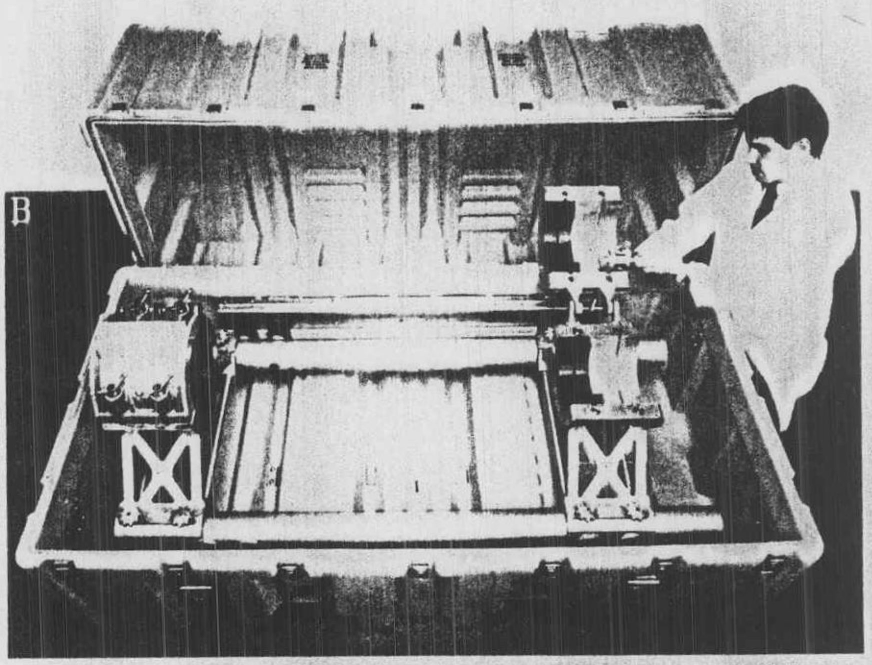
A. Field transport of delicate stack-gas analysis equipment called for a rugged container with multi-cavity cushioning. Hardigg designed a hinged-style case with fabricated polyurethane cushioning that provided the required protection while transporting the complete system.

HARDIGG REUSABLE CONTAINERS PROVIDE COMMERCIAL SHIPPING SOLUTIONS.



B. The problem was two-fold: provide an engine manufacturer with a precise means of securing a 750-lb. jet engine rotor during multiple shipments; make it easy to load and unload. Hardigg filled the dual need with a rugged container that features a precision holding fixture for damage-free shipment plus easy accessibility for rapid loading and unloading.

C. This custom-designed Hardigg medical-instrument container for a CAT-scan component provides both physical and thermal shock protection for the valuable and highly sensitive crystal and detector assembly. In addition to increasing the container life-cycle from 5 to 100 trips and reducing shipping weight by 130 lbs., the container's high thermal efficiency permitted the first successful shipments during the winter season.



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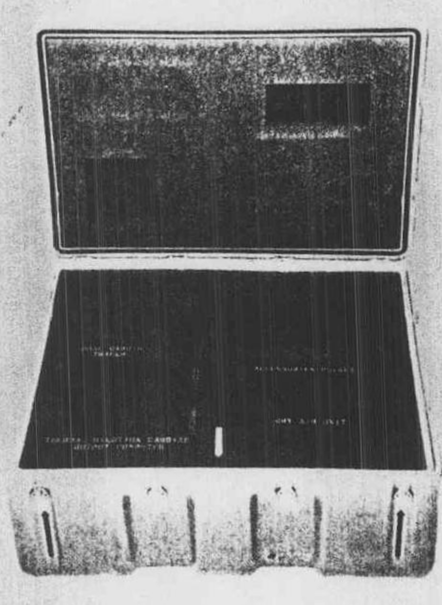

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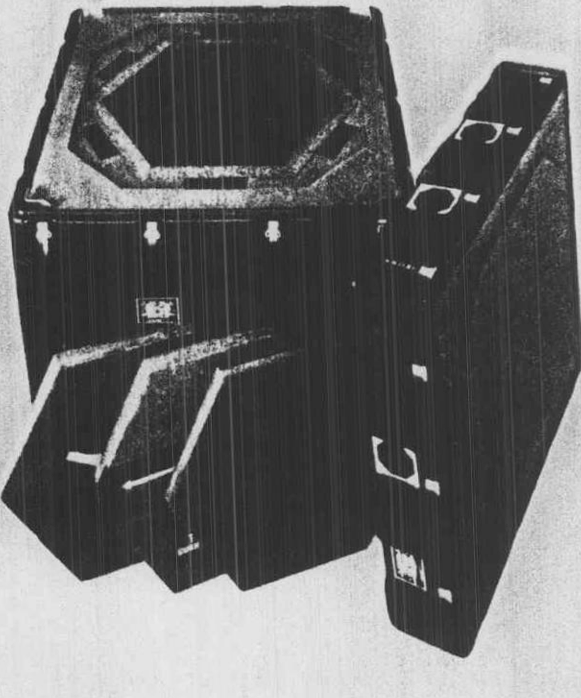


While Hardigg produces airtight, watertight, and dent-resistant shipping containers in over 130 different types and sizes for a wide range of standard applications, the company also makes durable, specialized containers to meet custom requirements.

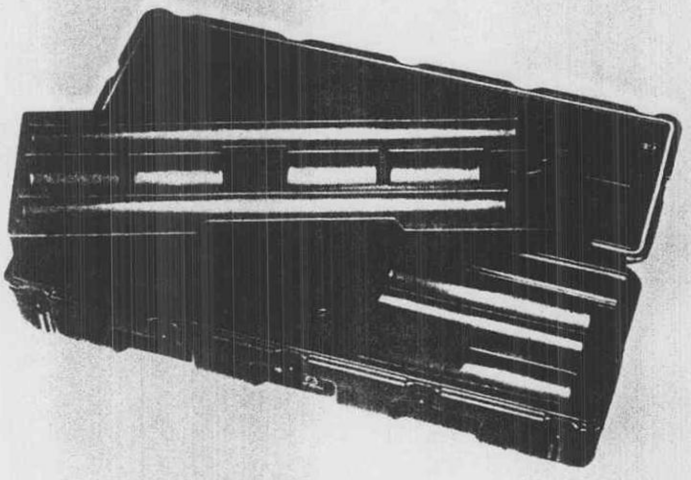
The company's strong inventive bent and proven ability to shape materials and methods to new ends have won Hardigg a solid reputation for innovative container design and performance.

A. Field optical equipment must be stored in a clean environment to protect lens element coating. Then it must remain secure during transport. Finally, components must be sequentially accessible for convenient assembly and use. Hardigg met all these requirements with gasketed tongue-and-groove lid sealing and double-wall case construction featuring molded-in component pockets.

B. Hardigg developed pressure-tight containers for transporting Air Force emergency power-unit fuel tanks containing hazardous H-70 hydrazine. Double-wall construction provides tight containment of the fuel tank, withstands rough

HARDIGG CONTAINER TECHNOLOGY MOVES AHEAD TO SOLVE SHIPPING PROBLEMS.

A



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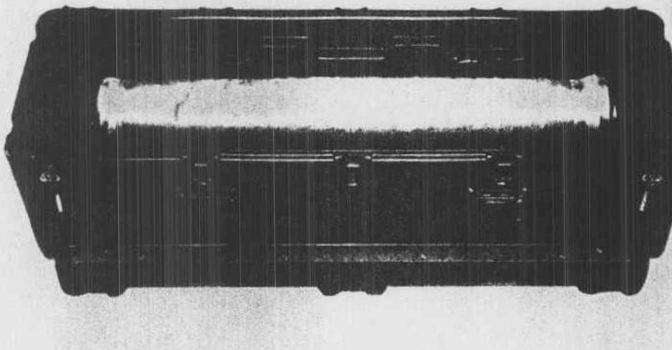

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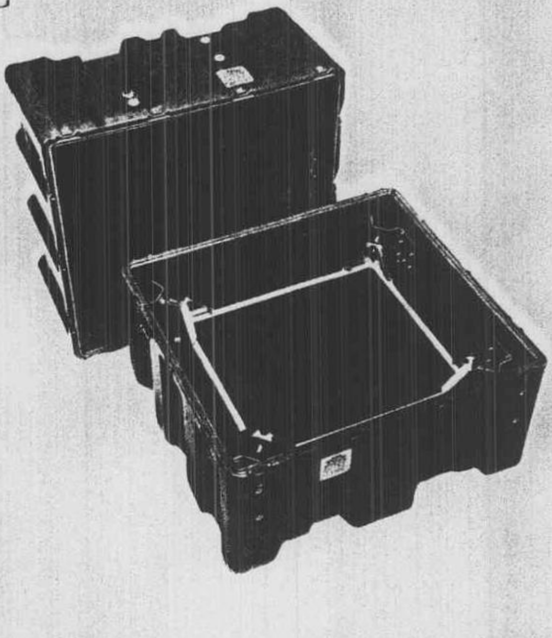

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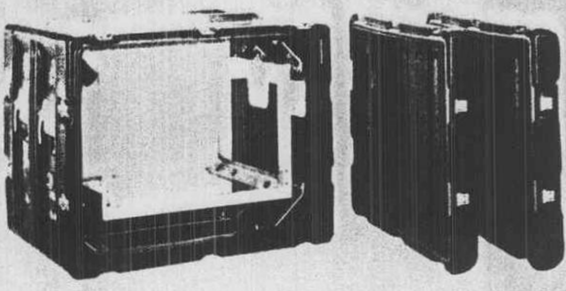

handling—including a 48-inch end-drop test—and reduces the potential for ruptures. In the event of any leakage of fluid from the fuel tank, a built-in safety indicator signals the presence of hydrazine within the shipping container.

C. Hardigg developed a versatile, reusable deck container that accommodates single units of varying dimensions and weights to protect individual pieces of avionics equipment against maximum allowable G-forces.

Airtight seals eliminate the expense and labor of installing barrier bags, and the containers are reusable for a minimum of 100 trips, compared with 10 trips maximum for previously used packaging.

D. This Hardigg container is designed to transport and protect rack-mounted field computer equipment and provides easy access to the equipment for operation, without removing it from the container. The double-end opening permits the instrument to be plugged into other equipment. Elastomeric shock mounts are provided for engineered shock values during rough handling.

PROTECTION BY DESIGN.

Take advantage of superior Hardigg reliability and engineering to achieve advanced protection for your products while you economize on your shipping-material investment. Save even more by taking advantage of Hardigg custom-design assistance for your products. For engineering help on an immediate design problem, call (413) 665-2163.

HARDIGG INDUSTRIES, INC.

PROTECTION BY DESIGN

P.O. Box 201
North Main Street
South Deerfield, MA 01373
(413) 665-2163
Telex: 955431
Facsimile: 413-665-4801

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24 Link Drive
Rockleigh, N.J. 07647
Telefax: (201) 767-4196
Telex: 6853354/LEITZ UW

WILD SURGICAL MICROSCOPE
1-800-526-0355

Prepared for: ______________________
____
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Telephone: (   )   -

	Part #	Description	
Optics Carrier	445-173	M690 Optics Carrier	14,400
	445-177	M691 Optics Carrier	14,400
	439-062	UV Filter GG 385/690	55
	439-063	UV Filter GG 435/690	55
	445-560	M695 Optics Carrier w/coupling	19,000
	445-212	M655 Optics Carrier w/coupling	9,800
	443-760	M650 Optics Carrier	5,200
	443-762	M651 Optics Carrier	5,200
Microscope Carrier	389-160	Micro Carrier w/lever-M690	1,600
	232-478	Micro Carrier w/drive-M690	2,200
	182-506	Micro Carrier w/lever-M650	1,000
	182-508	Micro Carrier w/drive-M650	1,700
Tiltable Joints	182-507	Tiltable joint w/drive	1,900
	182-526	Tiltable joint w/brake	1,000
Rotation Joints	422-558	Rotatable adapt/M690	650
	445-181	Rotatable adapt/M650	400
X-Y's	997-580	X-Y Coupl w/mic carr + Extender & Bracket	8,025
	Wall mounted controls:		
Ceiling Mounts	424-236	Ceil Mt MS-F 115V	22,000
	997-502	Wall mounted control unit/Pneumatic/M690	11,500
	997-206	Wall mounted control unit/Multiplex/M690	12,000
	439-126	Dust cover F/MS-A MS-C	35
	997-585	Wall mounted control unit/Multiplex/M695	12,000
	Microscope mounted controls:		
	424-236	Ceil Mt MS-F 115V	22,000
	445-115	M690 Swingarm F/MS-F	6,400
	473-712	Ceiling Control Unit/Pneumatic	4,300
	445-070	Ceiling Control Unit/Multiplex	4,800
	997-238	Mt. Colum f/Mini Ceiling	2,300
	997-083	M655 Ceiling mount/complete	28,500
Floor Stands	997-207	Fl Std M690 w/o Ft Pd/Pneumatic	13,000
	997-553	Fl Std M690 w/o Ft Pd/Multiplex	13,500
	997-696	Fl Std M695 w/o Ft Pd/Multiplex only	13,500

Prepared for: ______________________
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Telephone: (   )   -

	Part #	Description	
Floor Stands Cont'd	399-763	Floor Stand/M650	8,400
	445-354	Floor Stand/M655	8,500
Space Pointer	445-545	Space Pointer Stand	103,000
	997-560	Control Unit Package for Space Pointer	4,970
	445-543	M690 Optics Carrier Space Pointer	14,400
Column Extender	435-028	Bottom column extender	700
	997-163	Top Column Extender	350
Weights	457-174	Weight for MS-C stand	500
Controls Pneumatic	997-187	Foot Control/M690/F&Z/Pneumatic	750
	997-192	Foot Control/M690/F&Z&XY/Pneumatic	1,600
	997-191	Hand Control/M690/F&Z f/Pneumatic only	350
	997-203	Hand Control/M690/F&Z&XY f/Pneumatic only	1,600
Controls Multiplex	445-066	Foot Control/M690/F&Z/Multiplex	950
	445-067	Foot Control/M690/F&Z&XY/Multiplex	2,550
	445-203	Hand Control/12 Function/Multiplex	1,500
	445-289	Hand Control Holder	135
	445-068	Holder for foot control	350
Binocular Tubes	182-503	Bino Tube/Inclinable 0-180	5,800
	429-782	Bino Tube-LW Slung T	2,300
	429-784	Bino Tube-Straight T	1,800
	409-841	Bino Tube-High Inclined 45	750
Eyepieces	384-070	Eyepiece WF 10X/21B ADJ	450
	334-630	Eyepiece WF 15X/14B ADJ	450
	377-506	Eyepiece WF 20X/11B ADJ	450
	389-170	Spacer ring 6mm f/WF-Eyepiece	10
	389-171	Spacer ring 9mm f/WF-Eyepiece	10
Objectives	411-597	Objective F=100mm	800
	441-787	Objective F=150mm	450
	431-692	Objective F=175mm	450
	382-162	Objective F=200mm	450
	457-297	Objective F=225mm	450
	407-743	Objective F=250mm	450
	457-298	Objective F=275mm	450
	382-168	Objective F=300mm	450
	997-176	Objective F=330mm	450
	431-693	Objective F=350mm	450
	382-172	Objective F=400mm	450
	997-228	Objective F=450mm	450

Effective 4/91

Total Side 1 ______________________

	Part #	Description	
Objectives Red Reflex	997-079	Red Reflex Kit-150mm w/sterilizable ring	1,025
	441-897	Red Reflex Kit-175mm w/sterilizable ring	1,025
	443-697	Red Reflex Kit-200mm w/sterilizable ring	1,025
Objectives Fine Focus M655	445-357	Objective F=200mm Fine Focus/M655	600
	445-358	Objective F=225mm Fine Focus/M655	600
	445-199	Objective F=250mm Fine Focus/M655	600
	445-359	Objective F=275mm Fine Focus/M655	600
	445-360	Objective F=300mm Fine Focus/M655	600
Objectives Fine Focus M695	997-595	Objective dist=250mm M695	2,450
	445-563	Objective dist=300mm M695	2,450
Beam Splitters	319-449	Beam splitter/VIS 50%	1,150
	319-423	Beam splitter/VIS 20%	1,150
Coaxial Observation	411-576	Stereo attach F/2nd OBSV/Binocular	2,700
	308-701	Tube-mono F/2nd OBSV/SHORT	1,800
	384-000	Tube-mono F/2nd OBSV/LONG	2,000
	415-905	Dual stereo attach	4,400
Stereo Assistant's Microscope	997-210	Carrier F/AM 150-250/M690	900
	997-209	Carrier F/AM 175-300/M690	900
	397-127	Carrier F/AM 200-300/M690	900
	997-208	Obj spacer ring F/RR	230
	397-111	Carrier F/AM 200-300/M650	900
	411-590	Mag changer/5 step	1,600
	346-910	Tube wedge - 15 degrees	490
	473-814	Carrier F/AM 175RR - 275/M690	1,130
	473-816	Carrier F/AM 200RR-300/M690	1,130
Wild Video System	997-351	Complete Dual Camera (60,85,107 cine/250,350 still)	4,200
	997-060	60mm video adapter complete	2,500
	997-080	85mm video adapter complete	2,000
	997-107	107mm video adapter complete	2,000
		to convert above to dual adapter add one of the 445-322 or 445-323	
	445-322	Adapter for still 35mm photograph 250mm	250
	445-323	Adapter for still 35mm photograph 350mm	450
		Additional C-Mounts to be used with complete system	
	445-324	60mm C-Mount only	1,000
	445-325	85mm C-Mount only	500
	445-326	107mm C-Mount only	500
Video Only Adapter	399-770	Cine/TV tube F=107mm	1,250
35mm Still Camera only	399-772	Photo tube F=350 mm	1,100
	399-760	Photo tube F=250mm	900
Microscope Adapters	445-543	M690 Optics Carrier/Contraves	14.400
	997-111	Adapter/Zeiss access to WILD beam split	300
	997-129	Adapter/WILD access to Zeiss beam split	300
	997-182	Contraves adapter/M650	1.550
	443-[illegible]	Contraves adapter/M690	2.600

	Part #	Description	
Additional Illumination Systems	445-052	Slit Illuminator Complete/M690	6,900
	433-453	Obj F/200 SL	450
	997-237	Oblique Illuminator	1,400
Bulb	384-643	Bulb 12V 50W centered	60
Miscellaneous	439-126	Dust cover	35
	997-114	Dovetail F/M650-Z	200
	997-078	Eclipse Assembly	650
	997-135	Holder for Kelman lens w/o lens	600
	404-025	Double-Iris diaphragm	329
	399-761	Wall/table stand MS-A	7,200
	473-818	Large swing arm stand MS-D/M650	1,880
Asepsis	384-656	Transparent cover	15
	180-591	Clip-on handle	25
	443-792	Lever extension	13
	428-328	Sterile Cover/PD adjust	10
	443-714	Sterilizable ring F/RR	25
	997-086	M655 Handles Complete Set	250
	997-087	M655 Sterile handle only (1 each)	90
Filters M690	439-062	UV Filter GG 385/M690	55
	439-063	UV Filter GG 435/M690	55
	439-064	UV Filter GG 470/M690	55
	441-843	VG Green Filter/M690	55
	439-061	KB12 Daylight Filter/M690	55
Filters M650	455-238	KB12 Daylight Filter/M650	55
	455-239	GG385 UV Filter/M650	55
	455-240	GG435 UV Filter/M650	55
	455-241	GG475 UV Filter/M650	55
	455-242	VG9 Green Filter/M650	55
Leica Basic Outfit	S10-055	Leica R-E Camera	2,000
	S14-208	Motor Winder	411
	S14-238	Electric Cable Release	68
	395-171	T Mount Leica R series	63
Camera Accessories	997-211	IR motor winder	700
	S14-216	Data back DB/2-R5, R-E	615
35mm T Mount Adapters	395-171	T mount Leica R Series	63
	386-674	T mount/Contax	63
	162-284	T mount/Olympus	63
	162-282	T mount/Pentax	63
	162-278	T mount/Nikon F	63
	162-276	T mount/Canon RM	63
	162-275	T mount/Minolta RS1	63

Total Side 1 ______________________

Total Side 2 ______________________

Total Quotation ______________________

Sol. DLA120-92-R-0646

NSN: 6515-01-335-9383
Microscope, Surgical, Binocular, Multi-Disciplinary

Brand: Wild   Model: M650

443-760	M650 Optics Carrier
182-506	Micro Carrier w/lever
182-526	Tiltable joint
399-763	Floor Stand / M650
182-503	Bino Tube / Inclinable 0-180
429-784	Bino Tube Straight
384-070	(2x) Eyepiece 10x Wide Field
389-170	(2x) Spacer ring 6mm
431-692	Objective F=175mm
407-743	Objective F=250mm
382-168	Objective F=300mm
382-172	Objective F=400mm

Unit Price = $12,000.00

Optional Qty. Unit Price = $11,000.00

Hardigg reusable container unit price = $ 4,500.00

↑

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INTRODUCTION

The purpose of this book is to help you to quickly and easily trouble shoot the most pressing problems that might occur with your **"WILD"** surgical microscope.

It is true that most of your questions can be answered by calling our toll free numbers but there are times when for one reason or another this cannot be done. In these cases the simple step by step trouble shooting process should help you to either solve the problem or help us to correct it quickly.

Be comfortable in the fact that your WILD microscope because of its modular design can be up and working in a very short period of time, however, there are some situations which make a non functioning microscope "nerve racking". Having a patient under anesthesia and getting ready to use the microscope is not the time to check the microscope.

TRY TO CHECK THE MICROSCOPE THE DAY BEFORE SURGERY TO GIVE US SOME TIME TO HELP YOU!!

THIS MANUAL SHOULD BE USED ALONG WITH OUR "PREVENTIVE MAINTENANCE GUIDE". MOST OF THE MECHANICAL PROBLEMS YOU WILL HAVE SHOULD BE ANSWERED IN THE "PREVENTIVE MAINTENANCE MANUAL".

1-800-526-0355

OVERVIEW OF THE WILD MICROSCOPE SYSTEM

Most of the problems with the WILD microscope are either pneumatic or electrical. As you can see by diagram "A" there are 6 places that the problem can occur, 3 pneumatic and 3 electric.

The basic trouble shooting technique will be to isolate these pieces from one another in order to find the problem.

The fact that there are 2 complete systems at work, pneumatic and electric will help you find the malfunction faster.

The pneumatic system will activate the electric system.

If you put your foot down on the foot pedal air is pushed through a plunger, in the footpedal through the hose, and enflates a bladder in the control unit. This bladder will push a plate which in turn activates an electric switch - A clicking sound is heard - if **YOU DO NOT** hear a clicking sound in the control unit when you put your foot down on the foot pedal **YOU HAVE A PNEUMATIC** problem. If **YOU DO** hear a clicking sound in the control unit when you put your foot down on the foot pedal **YOU HAVE AN ELECTRIC** problem.

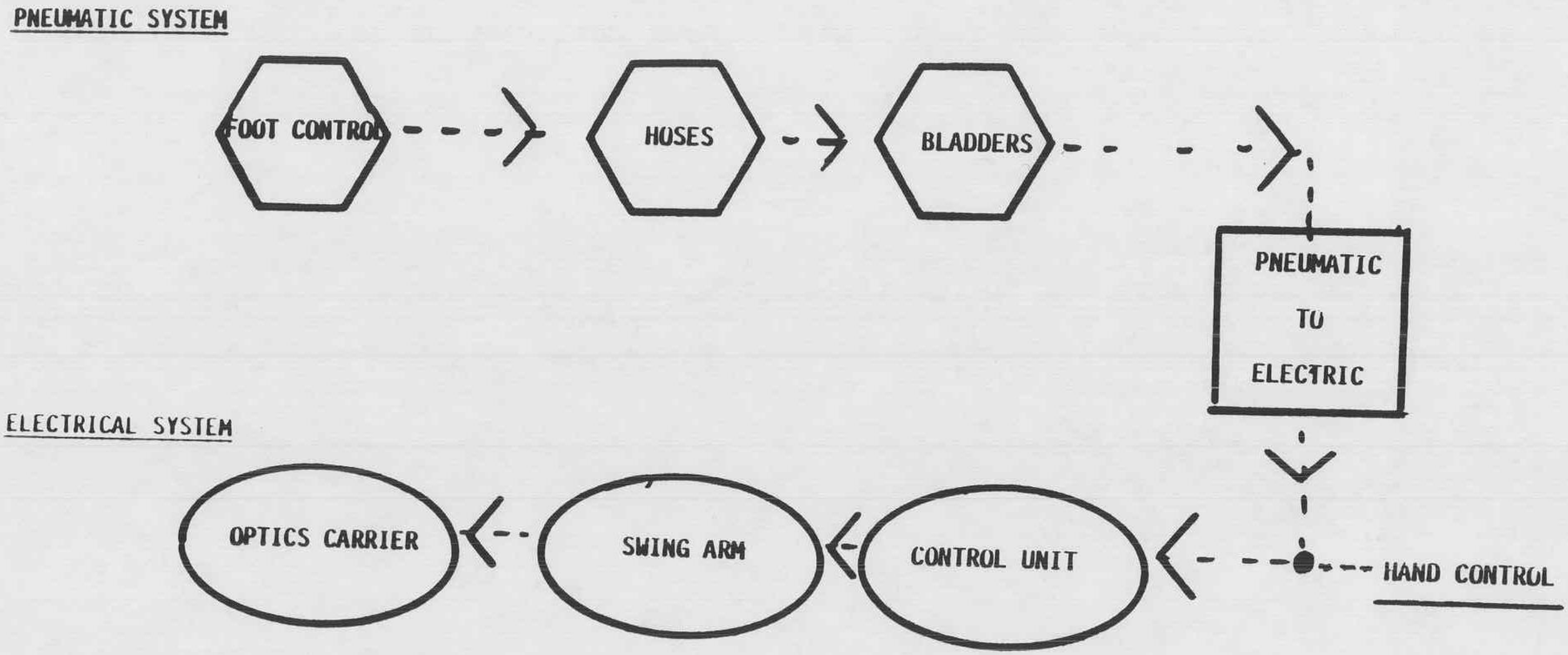
A hand control #997-191 is a good accessory to have with your M690 since it will completely bypass the pneumatic system and go directly to the electric system.

Example:

If you have a focus problem, when you use the footpedal and then use the hand control and the focus works you **have a pneumatic** problem. The hand control will also enable you to get through your procedure until a repair is made.

If the hand control does not solve your focus problem you **have an electric problem**. Call Wild at 1-800-526-0355.

WILD MICROSCOPE SYSTEM


PNEUMATIC SYSTEM
FOOT CONTROL
HOSES
BLADDERS
PNEUMATIC TO ELECTRIC
ELECTRICAL SYSTEM
OPTICS CARRIER
SWING ARM
CONTROL UNIT
HAND CONTROL

1-800-526-0355

TROUBLE SHOOTING CHART

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No light	1. Control unit not set to 115V	1. Move switch under control unit to 115 volt
	2. Loose mains (orange) cable	2. Make sure cable is secure to wall and control unit
	3. Bad bulb	3. Replace bulb in microscope with a new bulb
	4. Bulb slider in middle position	4. Move bulb slider all the way to right or left side
	5. Bulb not pushed all the way in on track	5. Open lamp housing door and push bulb all the way in
	6. Optics carrier cable is loose	6. Tighten cable at swing arm (photo)
	7. Light blocking lever in optical path	7. Move light blocking lever (on left side of microscope) to forward position
	8. RK control unit lower lamp knob is not in correct position	8. Turn lower control unit lamp knob (external lamp) to 6:00 o'clock position
	9. Optics carrier cable is damaged	9. Change cable (call) 800-526-0355

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
Not enough light	1. Iris diaphragms closed too much	1. Make sure both iris on beamsplitter and binocular tube are open
	2. Bulb at the end of its life	2. Change bulb
	3. RK modified control unit lower knob is not set properly	3. With RK modified control units the lamp is controlled using both microscope lamp and external lamp knobs for maximum light. External lamp control should be set at 6:00 o'clock position and microscope lamp used in normal way
	4. If light control is at maximum and still need more light	4. Turn zoom illumination knob (photo) to increase light intensity
Shadow in field of view	1. Binocular or beamsplitter not seated properly	1. Remove both binocular and beamsplitter carefully reinstall them making sure both are seated properly
	2. Red reflex prism (bar) is in the optical path	2. Rotate front of red reflex lens until prism click is felt
	3. Bulbs not seated all the way in on track	3. Open lamp housing door and push bulbs all the way in

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No fine focus	1. Leak in the bladder - located in control unit (photo)	1. Bladder must be replaced call 1-800-526-0355
	2. Leak in plunger of footpedal	2. Either replace plunger or footpedal call 1-800-526-0355
	3. Rubber "O" ring in foot control connector is no good	3. Replace either the connector or footpedal call 1-800-526-0355
	4. Optics carrier cable is damaged where it enters the swingarm (photo)	4. Replace cable call 1-800-526-03535
	5. Swingarm wires broken (photo)	5. Either have biomed solder wires or call 1-800-526-0355
	6. The electronic chip in the control unit which controls focus is damaged. This usually caused by a damaged optics carrier cable	6. Call 1-800-526-0355 - we will send you both another control unit and optics carrier cable. **Replace optics carrier cable first** then replace the control unit

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No zoom	1. Leak in the bladder - located in the control unit	1. Bladder must be replaced call 1-800-526-0355
	2. Leak in plunger of footpedal	2. Either to replace plunger or footpedal call 1-800-526-0355
	3. Rubber "O" ring in foot control is no good	3. Replace either the connector or footpedal call 1-800-526-0355
	4. Optics carrier cable is damaged where it enters the swingarm (photo)	4. Replace cable call 1-800-526-0355
	5. Swingarm wires broken (photo)	5. Either have biomed solder wires or call 1-800-526-0355
	6. The electronic chip in the control unit which control zoom is damaged. This is usually caused by a damaged optics carrier cable	6. Call 1-800-526-0355 - we will send you both another control unit and optics carrier cable. **Replace optics** carrier cable first then replace the control unit
Double image	1. Binocular not seated properly	1. Remove binocular tube and secure it properly. Make sure binocular tube is properly aligned to alignment screw of optics carrier
	2. Beamsplitter not seated properly	2. Same procedure as above
	3. Binocular optics are out of allignment	3. Call 1-800-526-0355 - check under double image problem (A-Binocular)

NATURE OF TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
No XY movement in one direction (M690)	1. A bad plunger in the foot control	1. Call 1-800-526-0355 for a replacement plunger
	2. A bad bladder in the control unit	2. Call 1-800-526-0355 for a replacement bladder
	3. One of the cables going into the XY motor housing has been pulled out	3. Call 1-800-526-0355 for a replacement motor housing
Microscope drifting	1. (M650 only) Brake mechanism for focus handles is too loose	1. There is a brake located on the left focusing handle (photo). Turn this brake to stop the microscope drifting
	2. Swingarm drifting down because it cannot support the weight	2. First try to increase the tension control knob (photo) to a higher number. The higher the number the more weight you can support. If this fails to solve the problem call 1-800-526-0355 and we will replace the gas cylinder
	3. Inclinable binocular tube eyepieces are driftiing down	3. On the underside of the binocular tube there are 2 sets of screws on either side of the optics (photo). Use jeweler or other small screwdriver to tighten those screws and drifting will stop
	4. Coaxial observer tube is drifting (Photo)	4. Call 1-800-526-0355 and get a replacement

NO LIGHT

(a) The first thing to check is the green power switch of the control unit (photo).

IF THE POWER BUTTON IS NOT LIT PROCEED FROM HERE:

(1) No power from the wall plug - to check, plug the microscope into another outlet preferably outside the room you are in.

(2) Check orange mains cable where it connects into the control unit. (photo). Make sure plug is pushed all the way in.

(3) Control unit should be set at 110V not 220. To check, look under the control unit where the range main cable plugs in - there is a red recessed switch (photo) make sure switch is set to 115 volts.

IF THE GREEN POWER SWITCH OF THE CONTROL UNIT IS LIT PROCEED FROM HERE!

Since we have power to the control unit and you have no light in the microscope head the problem will be one of three places; microscope head (optics carrier); swing arm; control unit.

We will start our check with the **microscope head.**

(1) Check the bulbs - to make sure they are good use a new bulb from your spare bulbs if possible. If this is not possible and you have another WILD microscope in the area check the bulbs on the microscope you know works. You can also check the filament of the bulb with the microscope eyepiece. This is done very simply by taking the eyepiece out of the binocular tube, turn it over and look through the bottom of the eyepiece. Hold the eyepiece up to your eye and bring the bulb up to the eyepiece, you will see the filament very clearly and can see any broken wires which are not easily seen with the naked eye.

(2) Check to make sure that the slider which moves the bulbs from side to side (photo) is not in the middle position. In order for bulbs to work bulb slider must be on one side or the other.

(3) Make sure bulb is pushed all the way in on the track in order to make contact and evenly illuminate the field (photo).

(4) Check the cable which comes from the microscope head (optics carrier cable) (photo) and connects into the swing arm (photo). Make sure connection is secure. Make sure cable is not cut or pulled apart at socket.

(5) Some new style microscopes have a lever on the left side of the microscope (photo) which will put a metal plate (or light blocker) over the illumination path. To insure light is coming to your field of view, lever should be pushed forward (photo).

THE NEXT STEP IS A BIOMEDICAL CHECK WHICH IS VERY EASY TO PERFORM. PLEASE GO TO THE BIOMEDICAL SECTION AND LOOK UNDER LAMP PROBLEMS.

TRANSFORMER/CONTROL UNIT CHECK

(1) If you have an RK-Modified control unit (photo) the external lamp control knob should be set at the 6 o'clock position for maximum bulb brightness. If the control knob is set all the way to the off position, you will get no light in the microscope.

(2) There could be a loose wire in the control unit. To check SHUT OFF GREEN POWER BUTTON OR UNPLUG CONTROL UNIT FROM WALL - unscrew the screws from the front panel of the control unit (photo) and control unit panel will come forward.

(IF CIRCUIT BREAKERS POP, GO ON FROM HERE)

(3) Disconnect swingarm cable from control unit. Turn power button (green button) on. If circuit breakers still pop calal WILD Leitz at 1-800-526-0355.

SWING ARM CHECK

This is the swing arm (photo).

(1) Make sure optics carrier cable is disconnected (photo).

(2) Remove plate (photo) which holds internal wireing to external connectors.

(3) Check to make sure the connectors are tight and wires are secure.

(4) Check to make sure internal wires are not twisted so much that the internal solder connections are broken away from the female connectors (photo).

NOT ENOUGH LIGHT

1) **CHECK IRIS** - The first thing to check are the iris diaphragms (Photo) which are at a number of locations. If the Iris is closed down it will cut out light and also deteriorate your image, therefore, the iris' should be in the open position (#5 setting is open). The Iris' are located either in the beamsplitter, certain binocular heads or on some cine tubes.

2) **CHECK BULBS** - When a bulb reaches the end of its life it loses brightness and it is advisable to replace the bulb in your microscope with a new bulb from the box.

3) **RK-CONTROL UNIT** - If you have a control unit which has been modified for R.K. (Photo) there are two control knobs which affect the brightness of the bulbs. In order to have maximum bulb brightness the lower control unit knob (external lamp) should be set in the 6 o'clock position (Photo). The upper control unit knob will now function normally to give voltages between 6 & 12 volts.

4) **CONTROL UNIT KNOB** - Sometimes a customer will force the light control knob of the control unit past its designated stop (Photo). In order to reset the voltage a voltmeter and some expertise is needed - see section on Biomed adjustments.

5) **ZOOM ILLUMINATION** - The WILD M690 motorized zoom is the only microcope which keeps a constant illumination through the whole zoom range. It does this by means of a built in lens which moves with the zoom (Photo). If for some reason this zoom illumination system has become disengaged, the brightness of the microscope illuminated field could suffer. You can easily tell if this is the case by observing the manual override knob as you zoom up and down in magnification. This knob should move automatically between the magnification of approximately 16 and 36. If the zoom illuminator does not function call for service. Service numbers are located in back of this book.

   - Check Bio-Med section for ways to **increase voltage of the illumination system.**

SHADOW IN THE FIELD OF VIEW

Look

Problem - When you lok in the microscope you see a shadow in one corner of your visual field.

POSSIBLE SOLUTIONS TO THIS PROBLEM

1) Change your light bulbs and make sure new bulbs are seated all the way in the track.

2) Take off binocular and beamsplitter if necessary and reinstall beamsplitter and binocular tube making sure both are seated properly.

3) If you have a red reflex lens make sure front element is either completely engaged (white dot) or completely disengaged.

FOCUS PROBLEMS

I - DOUBLE IMAGE

The problem could be one of 3 places, the binocular tube, the beamsplitter, (if you have one) or the basic microscope body.

A-BINOCULAR

1) Disengage the binocular from the microscope body by means of the black locking screw (photo).

2) If possible look out of a window or down a long hall while using the binocular tube as a pair of regular binoculars.

3) If you still see a double image there is a problem with the binocular prisms. Call WILD/Leitz and get a replacement binocular.

B-BEAMSPLITTER

1) If you get no double image while looking through the binocular disengage the beamsplitter and put back the binocular tube in place of the beamsplitter.

2) If you get no double image the problem was in the beamsplitter - Call WILD and get a replacement.

C-OPTICS

If you still get a double image the problem could be in the optics of the microscope - call WILD and get a replacement.

II - NOT PARFOCAL

(Going from one magnification to another the microscope does not stay in focus).

A - 1) Make sure eyepieces are on all the way into the eyepiece tubes.

2) Make sure binoculars or other accessories are seated properly. To check this remove the piece in question and secure it again making sure it is seated flat not on an angle.

3) Make sure you go through the parfocality drill listed in the back of this book remembering for all microscopes to remain parfocal you must first focus at the highest magnification.

NO FINE FOCUS ON M690

If your focus stops working during your case use the course focus by moving the microscope up and down via its swingarm (see photo).
The no focus problem is either pneumatic or electrical and the following procedures should isolate where the problem is.

Pneumatic/Foot Control - When you put your foot down on the foot control the pneumatic system will engage an electrical switch causing the focus to move. When your foot is released the electrical switch disengages and the focus stops.

The result is:

a) When you put your foot down on the focus pedal you should hear a click (electric switch) in the control unit (Photo) if you hear another click before you take your foot off the foot pedal - YOU HAVE A PNEUMATIC PROBLEM.

b) When you put your foot down on the focus pedal and you hear no click (electric switch) YOU HAVE A PNEUMATIC PROBLEM.

c) When you put your foot down on the focus pedal and you hear a click (electric switch) and you DO NOT hear a click (electric switch) until you release your foot the chances are it is an ELECTRIC problem. Check the Biomedical section of this book.

How To Tell Where The Problem Is - The pneumatic problem is either in the foot pedal or in the control unit.

a) If you have an XY foot control - Both XY hose and focus and zoom hose can be switched, for example; disconnect the XY and focus and zoom hoses from the control unit. Now insert the XY hose into the focus and zoom socket of the control unit (Photo) and insert the focus and zoom hose into the XY socket.

Result - Now the joystick that usually operates the XY will operate the focus and zoom and the focus and zoom section of the foot control will operate the XY.

As you now push on the joystick if the focus of the microscope moves you can be sure the problem is in the foot control and should be exchanged. Call your WILD/Leitz microscopes: 1-800-526-0355.

b) If the focus still doesn't work the problem is probably a switch in the control unit that must be changed. Call WILD/Leitz or see Biomedical repair section.

NO ZOOM ON M690

If your zoom stops working during the case, use the zoom override handle supplied with your microscope (2 photos). (One photo to show what handle looks like, one photo to show where handle goes.) This handle is made of surgical steel and is sterilizable. Inserting the handle into the notch and rotating it will manually move the zoom.

The **NO ZOOM** problem is either pneumatic or electrical and the following procedures should isolate where the problem is.

Pneumatic/Foot Control - When you put your foot down on the foot control the pneumatic system will engage an electric switch causing the zoom to move. When your foot is released the electrical switch disengages and the zoom stops.

The result is:

a) When you put your foot down on the focus pedal you should hear a click (electric switch) in the control unit (Photo) if you hear another click before you take your foot off the foot pedal - YOU HAVE A PNEUMATIC PROBLEM.

b) When you put your foot down on the zoom pedal and you hear no click (electric switch) YOU HAVE A PNEUMATIC PROBLEM.

c) When you put your foot down on the zoom pedal and you hear a click (electric switch) and you DO NOT hear a click (electric switch) until you release your foot the chances are it is an ELECTRIC problem. Check the Biomedical section of this book.

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b) If the zoom still doesn't work the problem is probably a switch in the control unit that must be changed. Call WILD/Leitz or see Biomedical repair station.

1-800-526-0355

MICROSCOPE DRIFTING

The first thing you need to know is - What is drifting? Swingarm, inclinable binocular, fine focus of M650 brake systems and coaxial observer tubes can all drift if not properly adjusted.

SWINGARMS - (Photo) There is a tension control on the swingarm that is easily adjusted for different amounts of weight. If **NOT ADJUSTED** properly the whole optics assembly will drift either up (too much tension) or down (too little tension).

To adjust the swingarm you must:

(a) Disengage the locking lever (photo)

(b) Hold the swingarm up at an approximate 45° (photo)

(c) Turn the adjustment knob (photo). Least tension is at 1, the most tension is at 10. The lighter the weight the lower the number the more the weight the higher the number. Do not force control past #10.

If swingarm still drifts downward gas cylinder should be replaced. Check the Bio Med section and call WILD Leitz - 1-800-526-0355.

INCLINABLE BINOCULAR - (Photo) If your binoculars are drifting insert small jewler screwdriver into holes (see photo) and turn screw. This should tighten up tension and stop the drifting.

M650 FINE FOCUS - The tension adjustment is on the left focus handle of the M650.

(a) Remove clip-on handle

(b) Tension adjustment knob is located just to the right of where the clip-on handle was.

(c) Turn the tension adjustment knob until drifting stops.

BRAKE ADJUSTMENT - (photo) The black adjustment knobs can be adjusted for different tensions by turning clockwise to tighten and counter clockwise to loosen. This also applies to the XY brake handle (photo).

Co-axial observer tube - If your observer tube drifts there is no quick and easy fix that can be done in the field. - Call WILD Leitz at 1-800-526-0355 or your local rep and it will be replaced.

VIDEO

PROBLEM	CORRECTION
No picture on TV	* Check that the iris diaphragm lever on the beamsplitter is fully open
	* Check if the power plug is reliably connected to an AC outlet for both TV, camera and recorder.
	* Insure power switch is set to ON
	* Insure TV is turned to proper channel (3 or 4) or line A or B
	* Check that the camera and cable connections are tight and on the proper outlets
	* Check that the record button has been pressed on the VCR to turn on the TV picture (Refer to VCR Manual)
	* Check that the occluder for the light exit prism is not engaged
	* If a dual camera adapter with mirror lockup is used, ensure that mirror is not in 35mm position
	* If using Sony DXC 101 or 102 camera, turn main transformer power off and then back on to restore picture
	* Make sure RGB and External sync cables are properly connected
Snowy TV screen	* Camera not adequately mounted to adapter (Remount)
	* Video connections may be loose
	* Check that TV and VCR are tuned properly
	* Check for cuts in the coax cable insulation

Fine wavy lines across TV screen diagonally	* 60 cycle interference from fluorescent light fixtures. Check to make sure camera cables are not lying across tops of fluorescent lights or 220 volt power cables to hidden above false ceiling * Additional grounding needed for camera body to microscope * Bipolar interference. Additional grounding for camera needed
TV image upside down	* Rotate camera on adapter to turn image around
Spots on TV screen (spots do not move on screen)	* Dirt on target face of camera or on glass shield over target face. Advise returning unit to factory for cleaning * If spots do move, clean adapter and scope optics
Camera not in focus with surgeon	* Run thru parfocality drill in beginning of manual * Check that camera is seated properly on photo adapter * Check surgeons eyepieces to ensure they are fully seated on binocular tubes * With Sony adapters, make sure that the micro focus knob is at mid point * Check that C-mount adapter on Urban adapters is not turned upside down * If camera must be raised above adapter to achieve focus, add shims or reset back focus of camera target face (contact manufacturer).

Surgery not recorded on tape	* Check that erasure protection tabs or buttons are in place. If not, cover with tape * Check that tape has been fully rewound * Check that "video in" cables are secured to VCR properly
TV image too magnified	* Use a smaller focal length adapter * Check tube size of TV camera. Refer to field sizes in tables 1 & 2 * Check proper objective lens on scope
TV image too small	* Use a larger focal length adapter; either 107mm or 140mm * Check tube size of TV camera. Refer to field sizes in tables 1 & 2 * Check proper objective lens on scope
TV image washed out	* Insure that camera tube is Saticon, high resolution variety or CCD rather than the Newvicon, low light level type * Check the iris diaphragm position * Check condenser manual override position * Check camera sensitivity level setting (gain control)

	* Use Neutral Density filter if adapter has no iris diaphragm or when iris causes vignetting * Check that the pedestal control on camera control unit is not set to high
Color image unbalanced	* If camera control unit has a color bar generator, check color bars on TV and adjust * Rerun white balance and/or black balancing procedure at the light level intensity that the surgeon will be using * Check to see if the color control unit is on manual or auto. If on manual, switch to auto. If on auto check white and/or black balance

35MM

PROBLEM	CORRECTIONS
~~Gmaera~~ not in focus with surgeon	* Run thru parfocality drill in beginning of manual * Check that focusing reticule is inserted properly and in focus in the proper eyepiece * Check that surgeons eyepieces are fully seated on the binocular tubes * Ensure that photo adapter is optically compatible with WILD microscope, and fully seated on camera
Slides coming out too dark (some image visible)	* Check that camera is in the proper metering mode * Check ASA setting * Insure that film is being properly developed for the desired ASA setting * Check that camera shutter speed is not set too fast if camera is in manual mode * Check meter override setting if camera is so equipped. Refer to owner manual
No pictures on film	* Check camera loading procedure. Refer to camera owner manual * Check that film advances properly * Check beamsplitter diaphragm setting * Ensure camera is in proper metering mode

	* Check camera shutter speed * Check camera batteries for power drainage
Slides coming out too light	* Check that camera is in proper metering mode * Insure shutter speed is not set too slow in the manual mode * Insure proper ASA setting * Insure proper developing * Check meter override setting in camera is so equipped. (Refer to owner manual)
Pictures not oriented on film properly	* Rotate camera and adapter on photo tube
Pictures too blurry	* Check shutter speed - may be too slow * Go to a higher ASA film or use "push processing". Refer to photo manual
Pictures off center	* Put focusing reticule in proper eyepiece, one closest to camera

BIO MEDICAL SECTION

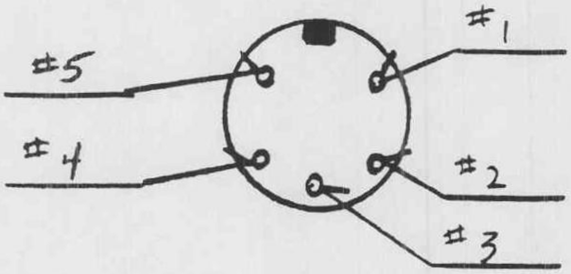
(Equipment: - Simple voltmeter set on D.C. to measure between 2 - 15 volts)

Since the problem could be in either the microscope head, swing arm or control unit we will now try to isolate which of these pieces could be the cause of the problem.

1. Disconnect the optics carrier cable from the swing arm (photo).

2. The female connector on the swing arm should look like the following drawing:

Diagram #1



1 + 5 = Lamp Check

3 + 2 = Focus Check

4 + 3 = Zoom Check

A. LIGHT PROBLEMS

If you insert the 2 probs of the voltmeter into holes 1 + 5 at the same time and turn the lamp control of the microscope all the way up your voltmeter should read approximately 13.5 volts.

If your voltmeter is reading in the range of 12 - 14 volts the problem **is** in the optics carrier. Most likely the optics carrier cable is in need of replacement. Call WILD/Leitz immediately at 1-800-526-0355.

If your voltmeter is **not** reading anything the problem is either in the swingarm or control unit

CONTROL UNIT CHECK

1. With the mains cable still plugged into the wall for power remove the 4 screws which hold the control unit front panel in place and let the front panel come forward (photo).

7

2. You will notice on the front panel a main P.C. Board, in the center of which is ~~TP 13.~~ Put your voltmeter probes here.

3-4-19

3. With the lamp control (photo) all the way to maximum you should be reading approximately 12 - 14 volts. If you read nothing there is a problem in the control unit please call WILD at 1-800-526-0355.

If you read 12 - 14 volts the problem is most likely in the swing arm or some connector is loose. Check for loose wires.

SWING ARM CHECK

1. Remove the 2 screws (photo) which hold the plate of the electrical connectors.

2. Look for broken wires or bad solder connections.

   If broken wires are found call WILD at 1-800-526-0355.

   If no broken wires are found check for loose connections somewhere in the system and call WILD Leitz at 1-800-526-0355.

B. FOCUS PROBLEMS

1. Disconnect optics carrier cable from swing arm (photo).

2. Insert voltmeter probes into holes #3 & 2 (Diagram #1).

3. Turn focus speed control on control unit all the way to the plus position.

4. Voltmeter should read between 2 - 6 volts .

   If voltmeter reads between 2 - 6 volts the problem is in the optics carrier. Most likely the optics carrier cable needs changing - call WILD at 1-800-526-0355.

5. If voltmeter does not read 2 - 6 volts check for loose connectors and call WILD at 1-800-526-0355.

C. ZOOM PROBLEMS

1. Disconnect optics carrier cable from swing arm (photo).

2. Insert voltmeter probes into holes #3 & 4 .

3. Turn zoom speed control on control unit all the way to the plus position.

4. Voltmeter should read between 2 - 6 volts.

   If voltmeter reads between 2 - 6 volts the problem is in the optics carrier. Most likely the optics carrier cable needs changing - call WILD at 1-800-526-0355.

5. If voltmeter does not read 2 - 6 volts check for loose connectors and call WILD at 1-800-526-0355.

KERATOMETERS

The following Keratometers can be mounted to the WILD microscope:

1) Nidek
2) Ophthalmic Ventures
3) Terry
4) Varidot

NIDEK KERATOMETER

Nidek Corporation
2460 Embarcadero Way
Palo Alto, California 94303
(800) 223-9044
(415) 493-9044

Dovetail supplied by Nidek Corporation will enable Keratometer to attach to WILD Microscopes.

Cost of unit approximately $20,000

Contact person: Mr. Verdis Hagan

TERRY KERATOMETER

Innomed Corporation
620 Lunar Avenue
Brea, California 92621
(714) 990-5740
(800) 990-5740

The Innomed Corporation modifies our optics carrier and control unit in attaching their Keratometer. Dovetail and mounting equipment are supplied by Innomed Corporation.

Cost of unit approximately $18,000

Contact Person: Mr. Peter Brown

OPHTHALMIC VENTURES

685 Canton Street
Norwood, Massachusetts 02062

(617) 769-6861
(800) 426-6713

The OV-1 Keratometer mounts by means of a dovetail supplied by Ophthalmic Ventures Corporation. This is a mechanical hook up only.

Cost of unit approximately $3,500

Contact Person: Ms. M. J. Nylander

1-800-526-0355

VARIDOT KERATOMETER

Syscomp Corporation
1138 S. Cedar Ridge Drive
Duncanville, Texas 75137
(214) 555-1212

Keratometer mounts to WILD M650 - or M690 by means of a dovetail supplied by the Syscomp Corporation. This is a mechanical hook up only.

Cost of unit approximately $9,000

Contact Person: Bob Carter

1-800-526-0355

DISPOSABLE DRAPES

There are two Companies that supply drapes for the WILD microscope:

1) **MICROTEK** - Columbus, MS
601-327-1863
800-824-3027

CONTACT: Rick Taylor

Drape #5952 (53" X 96") - Neuro/Plastic, Ophthalmology, ENT, OB/GYN, etc.

Drape #5986 (40½ X 56) - Same as above

Drape #5985 (20" X 56) - Simple drape with no observer systems for all above specialties

Drape #5953 (40½ X 56) - For use with separate assistant systems in Ophthalmology

2) **XOMED** - Jacksonville, FL
904-737-7900
800-874-5797

CONTACT: Sharon Stichter

2161427 - (40½ X 102) - Neuro/Plastic, Ophthalmology, ENT, OB/GYN, etc.

2161527 - (40½ X 62) - Same as above

2161627 - (40½ X 62) - For use with separate assistant system in Ophthalmology

1-800-526-0355

SUPPLIERS PRODUCTS FOR USE ON THE WILD MICROSCOPE

TV CAMERAS AND ADAPTERS

Sony

A. DXC 1850 : Single tube/C-mount
B. DXC 101 or 102: CCD camera / C-mount
C. DXC 3000: CCD - 3 chip / Bayonet mount (AVI 2W)
D. DXC 750MD: CCD - 3 chip / Bayonet mount (AVI 2W)

Ikegami

A. ITC 270M: Single Tube Chalnicon / C-mount
B. ITC 350M: 3 Tube Chalnicon / Bayonet
C. ITC 370M: 3 Tube Saticon / Bayonet
D. MK 309C: 3 Tube Chalnicon / Bayonet

Camera Adapters

Dual cameras with footpedal remote - MK 309C (pedal) CZA-3 adapter

Cine tube with auto iris - CZA - 2

Hitachi

A. DK 5050: 3 tube / Bayonet
B. DK 5000:

Circon

A. MV 9330: C-mount
B. MV 9340: Saticon / C-mount
C. MV 9320: CCD / C-mount

35MM CAMERAS

Leica
Minolta
Contax
Pentax
Olympus
Nikor
Canon

Should have apertured preferred metering with spot or center weighted metering and some form of electronic release system. ies Infra red or 3 meter electric hand release.

1-800-526-0355

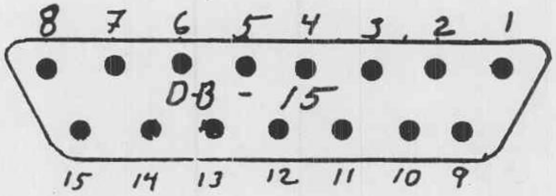
LASER COMPANIES WHICH MOUNT THE WILD

MODEL #	ADAPTER PARTS	PRICES	CONTACT NAME

PHOTO DESCRIPTION OF ALL MICROSCOPE PARTS

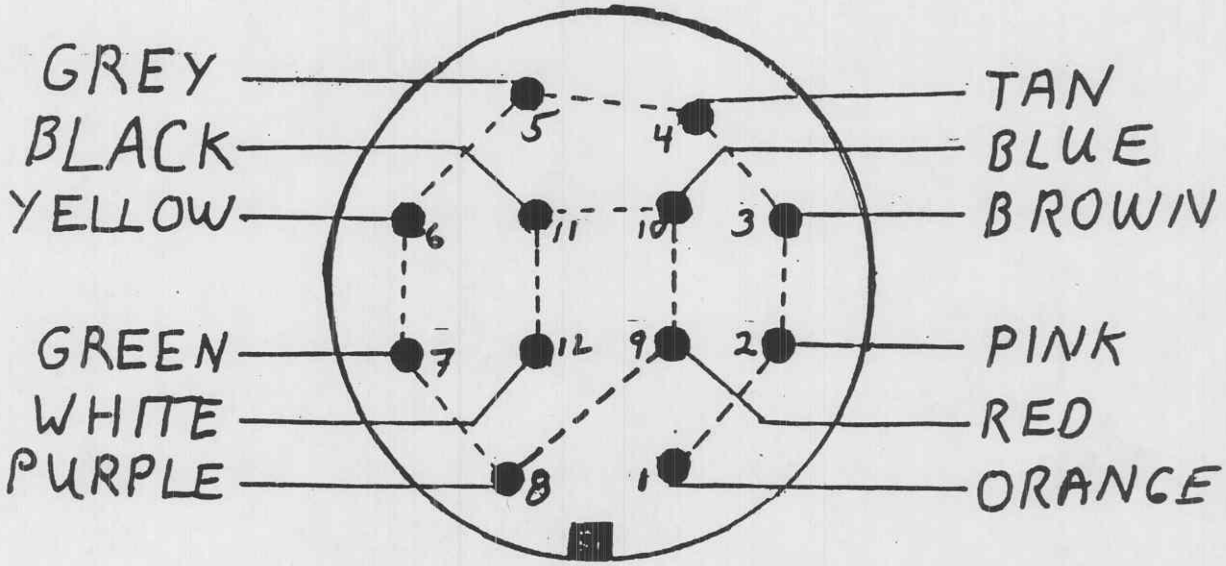
OUTSIDE SALES FORCE

Jack Bergman	800-343-0577
John Farr	800-642-2418
Jeff Johnson	800-346-7557
Betsy Schwartz	800-624-9837
Bruce Shoquist	800-222-6035
Randy Spencer	800-826-2119
Max Sturgis	800-649-2236

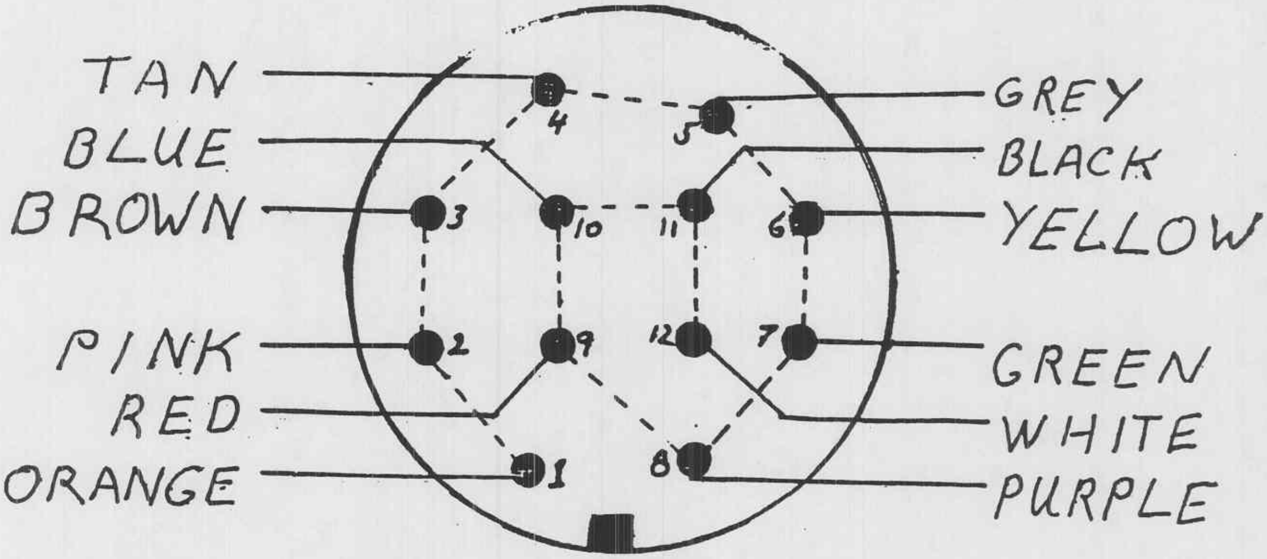


REAR VIEW DB-15 MALE

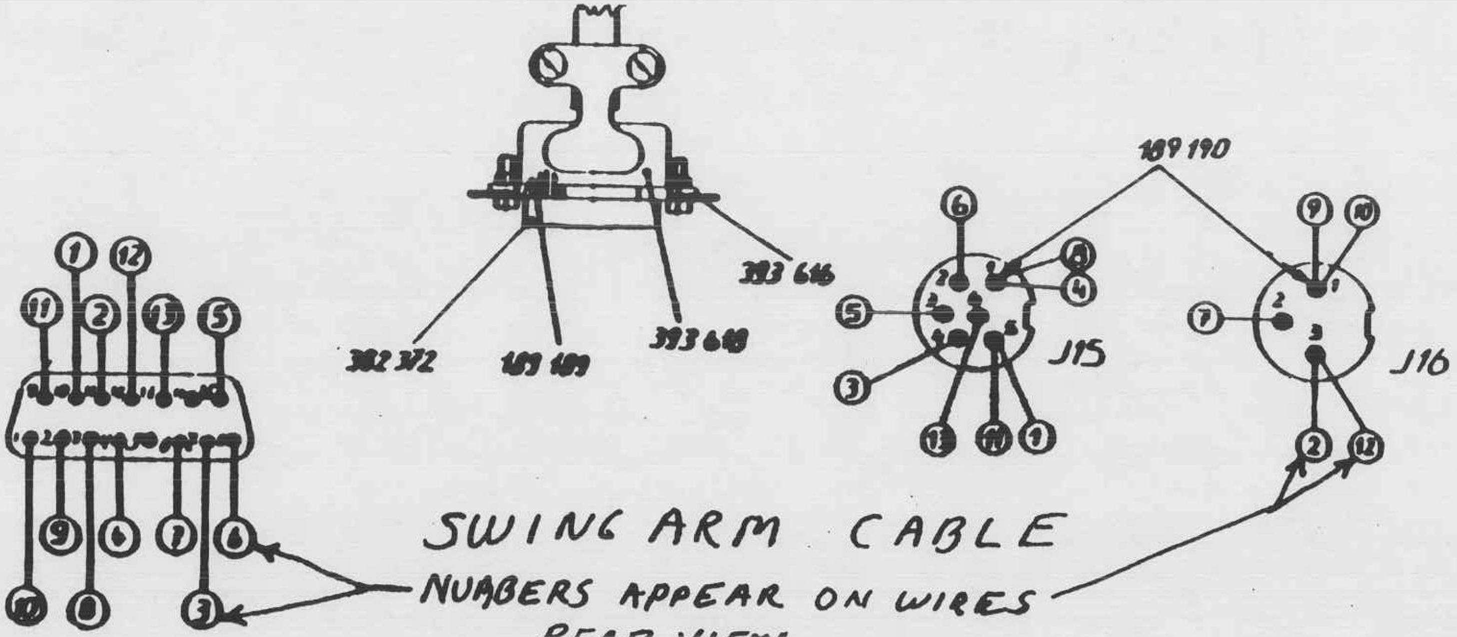
	DB 15	LAMP CABLE	SWING-ARM WIRE #	EXTENSION X-Y DB-15		DB 15	LAMP CABLE	SWING ARM WIRE #	EXTENSION X-Y DB-15	
LAMP 2	1	BLACK	10	BLACK		9	YELLOW	11	YELLOW	WHITE GND BROWN
	2	PURPLE	9	PURPLE		10	GREEN	1	GREEN	
LAMP-1 YELLOW GREEN	3	GRAY	8	GRAY		11	BROWN	2	BROWN	GND
	4	PINK	4	WHITE-BLACK PINK		12	RED	12	RED	
	5	TAN	N.C.	WHITE-BROWN - TAN		13	RED-GRAY WHITE-RED	13	N.C	AC RED ⏚
AC ⏚	6	WHITE	7	WHITE		14	RED-BLACK WHITE-ORANGE	N.C	N.C	AC ⏚
BLUE ZOOM	7	ORANGE	3	ORANGE		15	RED WHITE-YELLOW	5	N.C	GND FOR FOCUS + ZOOM PINK
GRAY FOCUS	8	BLUE	6	BLUE						
						N.C	= NO CONNECTION			


GREY
BLACK
YELLOW
GREEN
WHITE
PURPLE
TAN
BLUE
BROWN
PINK
RED
ORANGE
5
4
6
11
10
3
7
12
9
2
8
1

X-Y CONNECTOR
REAR VIEW - MALE CONN.


TAN
BLUE
BROWN
PINK
RED
ORANGE
GREY
BLACK
YELLOW
GREEN
WHITE
PURPLE
4
5
3
10
11
6
2
9
12
7
1
8

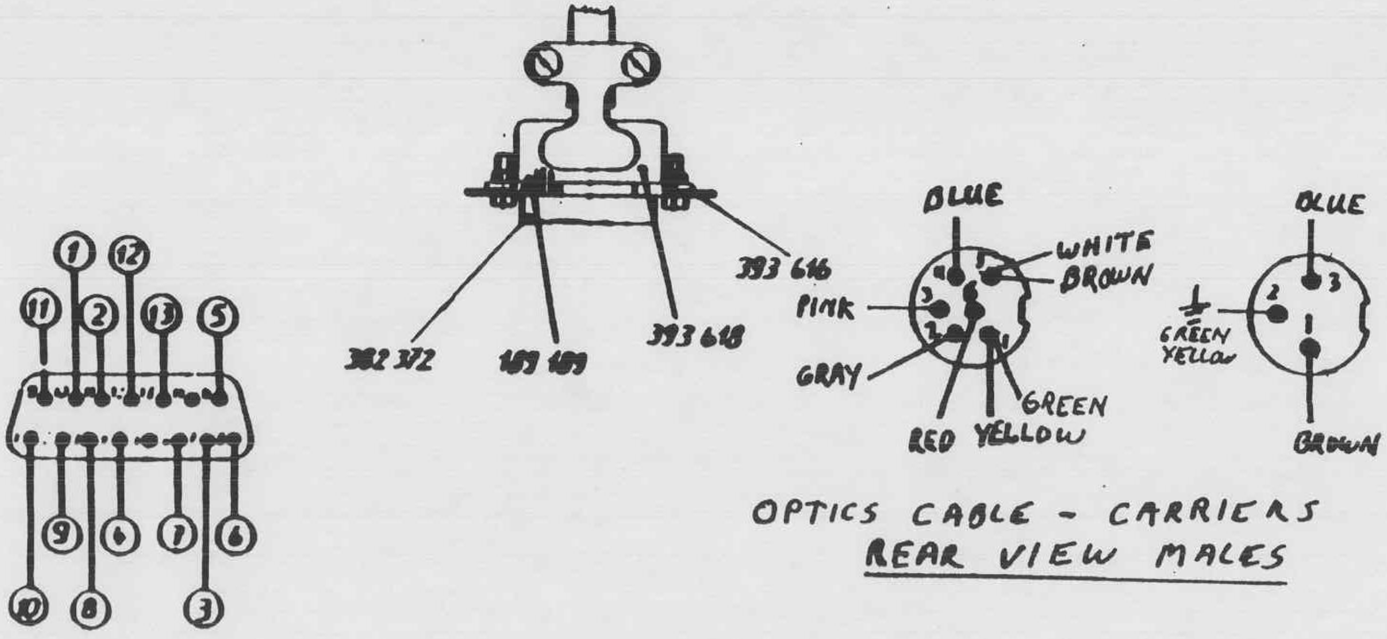
X-Y CONNECTOR
REAR VIEW - FEMALE CONN.


1
12
11
2
13
5
9
6
7
6
10
8
3
382 372
189 189
393 618
393 616
189 190
6
8
4
5
3
13
10
1
J15
9
10
7
2
12
J16

SWING ARM CABLE

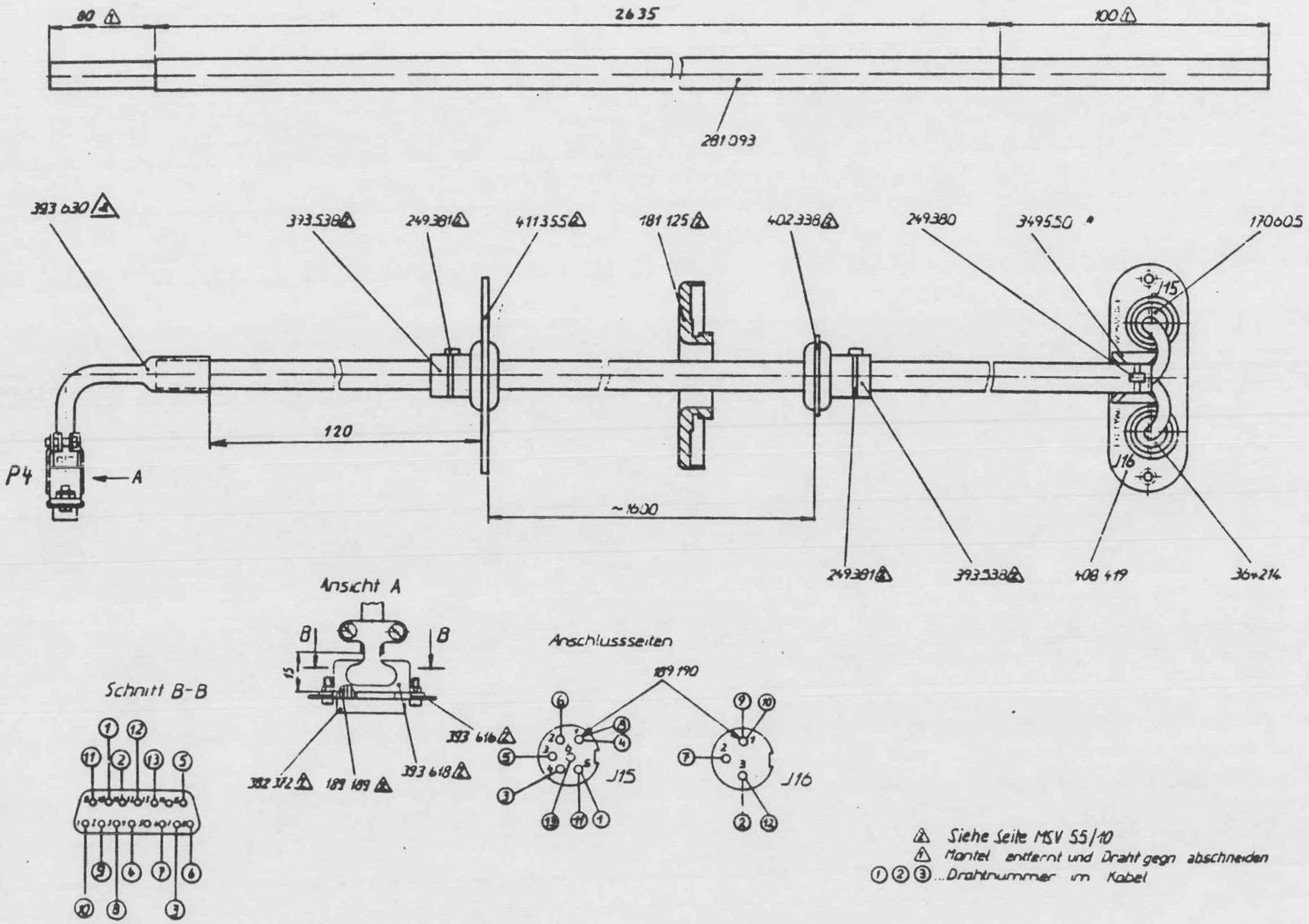
NUMBERS APPEAR ON WIRES

REAR VIEW


1
12
11
2
13
5
9
6
7
6
10
8
3
382 372
189 189
393 618
393 616
BLUE
WHITE
BROWN
PINK
GRAY
RED
YELLOW
GREEN
BLUE
GREEN
YELLOW
BROWN

OPTICS CABLE - CARRIERS

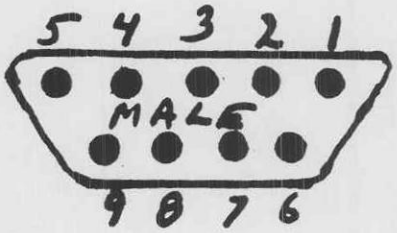
REAR VIEW MALES

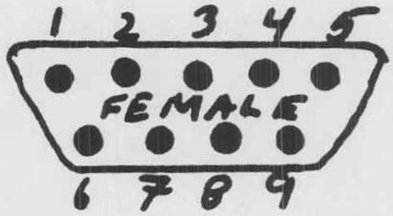

80 △1
2635
100 △1
281093
393630 △4
393538 △2
249381 △2
411355 △2
181125 △2
402338 △2
249380
349550
170605
J15
J16
120
P4
A
~1600
249381 △2
393538 △2
408419
364214
Ansicht A
B
B
15
393616 △2
382372 △2
189189 △2
393618 △2
Schnitt B-B
① ⑫ ⑪ ② ⑬ ⑤
⑨ ④ ⑦ ⑥
⑩ ⑧ ③
Anschlussseiten
189190
⑥ ⑧ ④ ⑤ ③ ⑬ ⑪ ①
J15
⑨ ⑩ ⑦ ② ⑫
J16

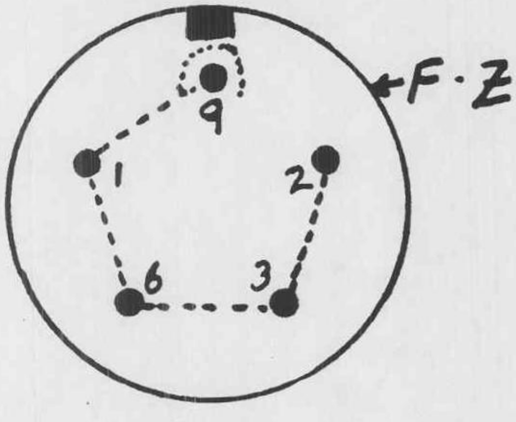
△2 Siehe Seite MSV 55/10
△1 Mantel entfernt und Draht gegn abschneiden
①②③...Drahtnummer im Kabel

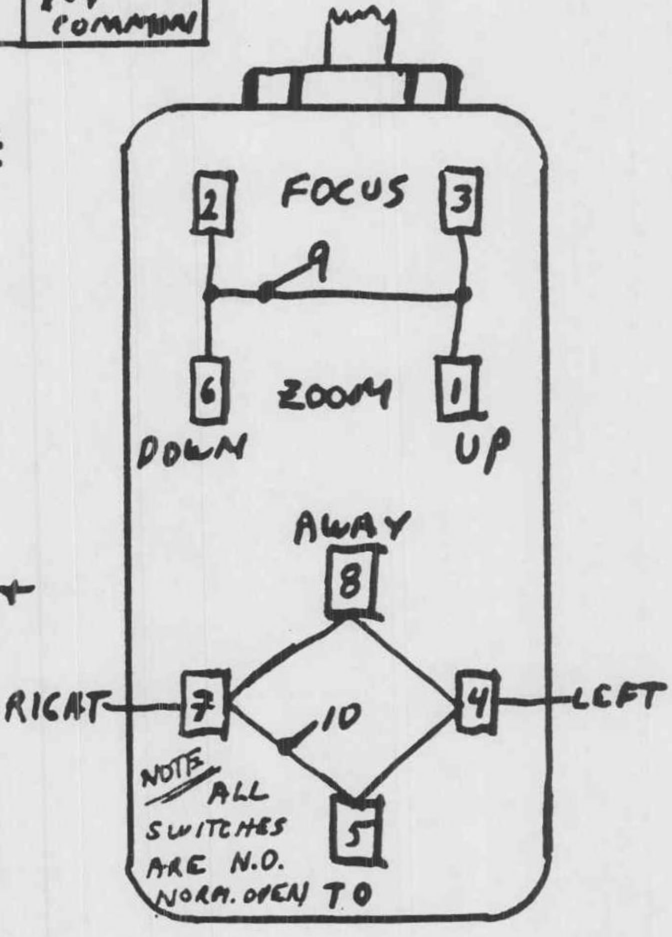
HAND CONTROLS

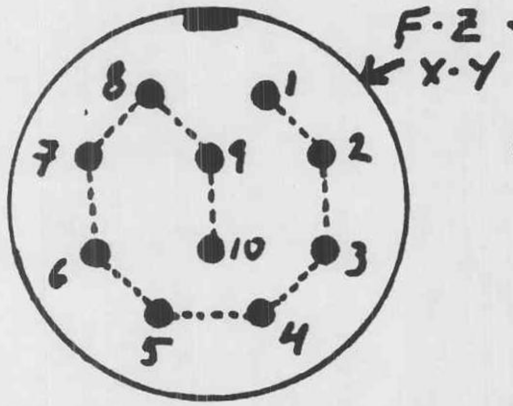
X·Y	COLOR	DB·9	FUNCTION
1	BROWN	1	ZOOM UP
2	BLACK	2	FOCUS DOWN
3	GREEN	3	FOCUS UP
4	WHITE		X·Y LEFT
5	GRAY		X·Y TO
6	ORANGE	6	ZOOM DOWN
7	PURPLE		X·Y RIGHT
8	YELLOW	8	X·Y AWAY
9	RED	9	FOCUS+ZOOM COMMON
10	BLUE		X·Y COMMON


5 4 3 2 1
MALE
9 8 7 6

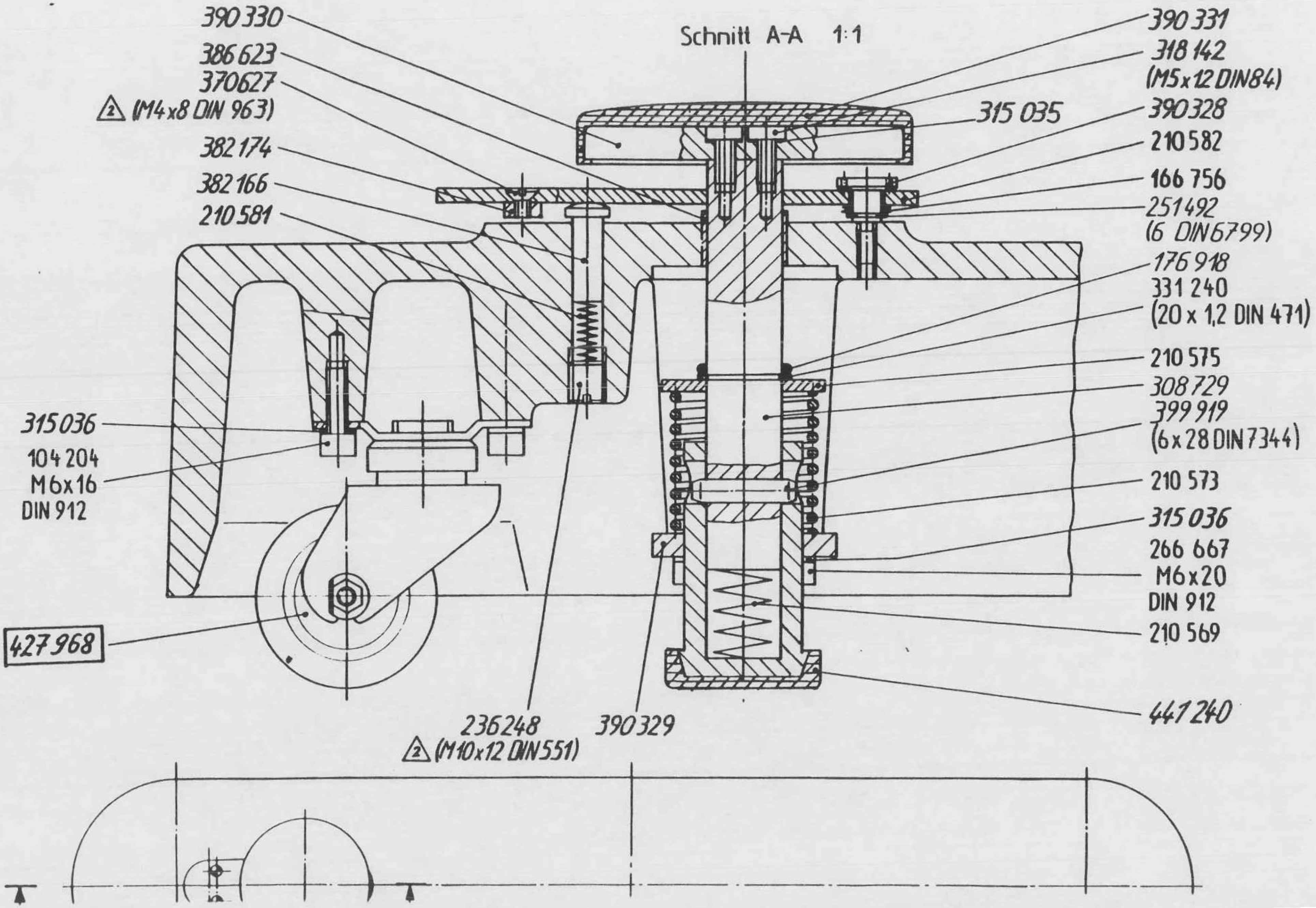

1 2 3 4 5
FEMALE
6 7 8 9

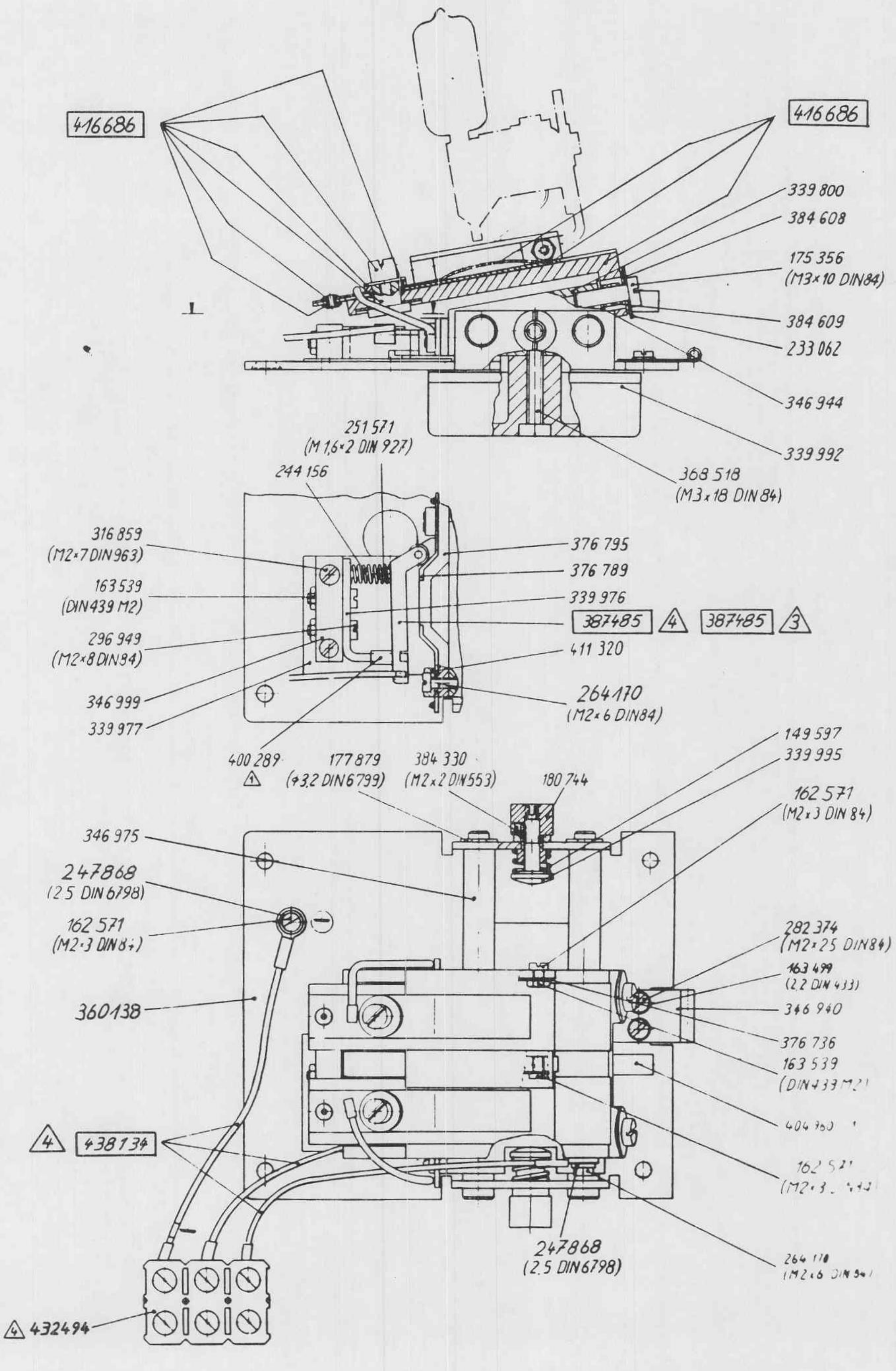



FOCUS
2
3
9
6
ZOOM
1
DOWN
UP
AWAY
8
RIGHT
7
4
LEFT
10
5
NOTE ALL SWITCHES ARE N.O. NORM. OPEN TO


F·Z + X·Y
8
1
7
9
2
6
10
3
5
4

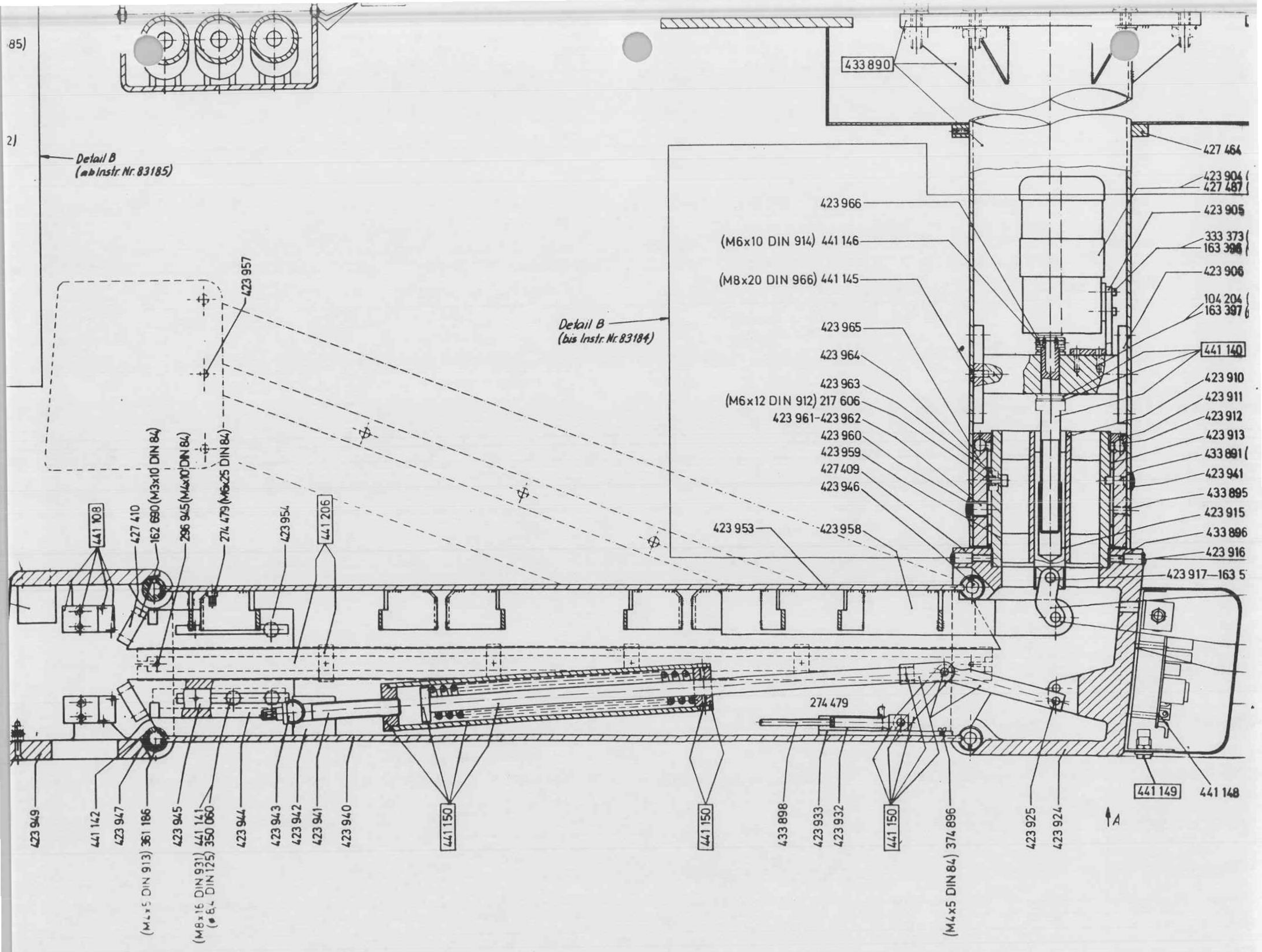
ALL ARE REAR VIEWS

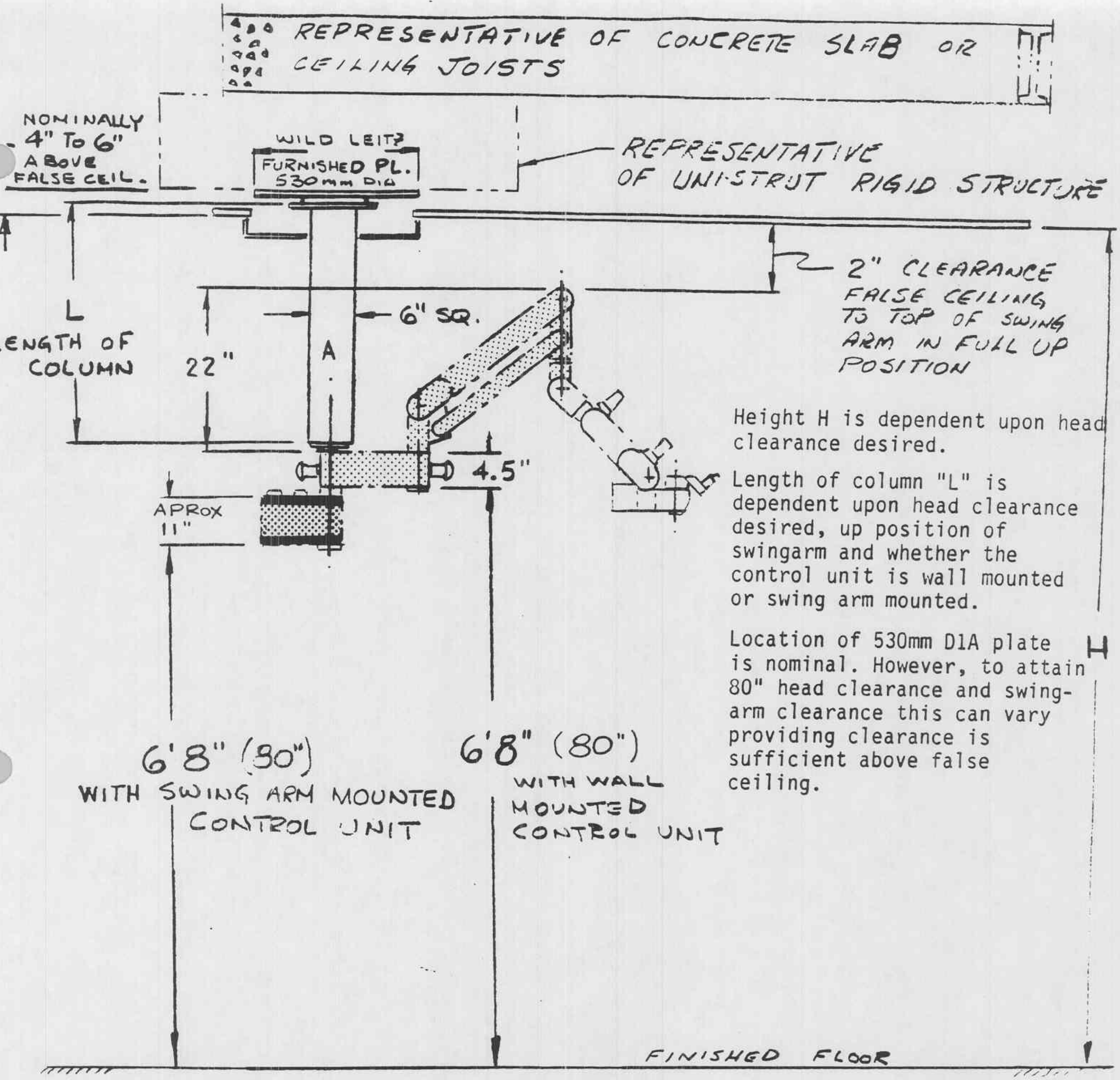

Schnitt A-A 1:1
390 330
386 623
370627
2 (M4x8 DIN 963)
382 174
382 166
210 581
315 036
104 204
M6x16
DIN 912
427 968
236248
2 (M10x12 DIN551)
390 329
390 331
318 142
(M5x12 DIN84)
315 035
390 328
210 582
166 756
251492
(6 DIN6799)
176 918
331 240
(20 x 1,2 DIN 471)
210 575
308 729
399 919
(6x28 DIN7344)
210 573
315 036
266 667
M6x20
DIN 912
210 569
441 240


416686
416686
339 800
384 608
175 356
(M3×10 DIN84)
384 609
233 062
346 944
339 992
368 518
(M3×18 DIN 84)
251 571
(M 1,6×2 DIN 927)
244 156
316 859
(M2×7 DIN963)
163 539
(DIN439 M2)
296 949
(M2×8 DIN84)
346 999
339 977
376 795
376 789
339 976
387485 4
387485 3
411 320
264170
(M2×6 DIN84)
400 289
1
177 879
(ϕ3,2 DIN6799)
384 330
(M2×2 DIN553)
180 744
149 597
339 995
162 571
(M2×3 DIN 84)
346 975
247868
(2.5 DIN 6798)
162 571
(M2×3 DIN84)
360138
282 374
(M2×25 DIN84)
163 499
(2,2 DIN 433)
346 940
376 736
163 539
(DIN433 M2)
404 360
162 571
(M2×3 DIN 84)
4 438134
247868
(2.5 DIN6798)
264 170
(M2×6 DIN 84)
4 432494

LASER COMPANIES WHICH MOUNT THE WILD

MODEL #	ADAPTER PARTS	PRICES	CONTACT NAME


85)
2)
Detail B
(ab Instr. Nr. 83185)
Detail B
(bis Instr. Nr. 83184)
433 890
427 464
423 904 (
427 487 (
423 905
333 373 (
163 396 (
423 906
104 204 (
163 397 (
441 140
423 910
423 911
423 912
423 913
433 891 (
423 941
433 895
423 915
433 896
423 916
423 917—163 5
423 966
(M6x10 DIN 914) 441 146
(M8x20 DIN 966) 441 145
423 965
423 964
423 963
(M6x12 DIN 912) 217 606
423 961-423 962
423 960
423 959
427 409
423 946
423 953
423 958
423 957
441 108
427 410
162 690 (M3x10 DIN 84)
296 945 (M4x10 DIN 84)
274 479 (M6x25 DIN 84)
423 954
441 206
274 479
441 149
441 148
A
423 949
441 142
423 947
(M4x5 DIN 913) 361 186
423 945
(M8x16 DIN 931) 441 141
(⌀ 6,4 DIN 125) 350 060
423 944
423 943
423 942
423 941
423 940
441 150
441 150
433 898
423 933
423 932
441 150
(M4x5 DIN 84) 374 896
423 925
423 924


REPRESENTATIVE OF CONCRETE SLAB OR CEILING JOISTS
NOMINALLY 4" TO 6" ABOVE FALSE CEIL.
WILD LEITZ FURNISHED PL. 530mm DIA
REPRESENTATIVE OF UNI-STRUT RIGID STRUCTURE
2" CLEARANCE FALSE CEILING TO TOP OF SWING ARM IN FULL UP POSITION
L
LENGTH OF COLUMN
22"
6" SQ.
A
4.5"
APROX 11"
6'8" (80")
WITH SWING ARM MOUNTED CONTROL UNIT
6'8" (80")
WITH WALL MOUNTED CONTROL UNIT
H
FINISHED FLOOR

Height H is dependent upon head clearance desired.

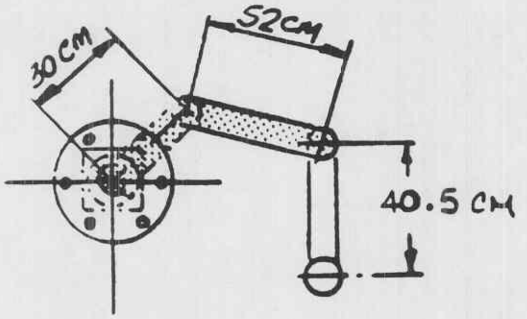
Length of column "L" is dependent upon head clearance desired, up position of swingarm and whether the control unit is wall mounted or swing arm mounted.

Location of 530mm DIA plate is nominal. However, to attain 80" head clearance and swing-arm clearance this can vary providing clearance is sufficient above false ceiling.

TOTAL WEIGHT (& Therefore bending moment) will vary according to "L" dim of column A. Maximum bending moment = 1200 lb. ft.

1. Column A weight is 19.02 lbs/foot
2. Maximum weight of system except for column A is 200 lbs.

PLAN FROM ABOVE

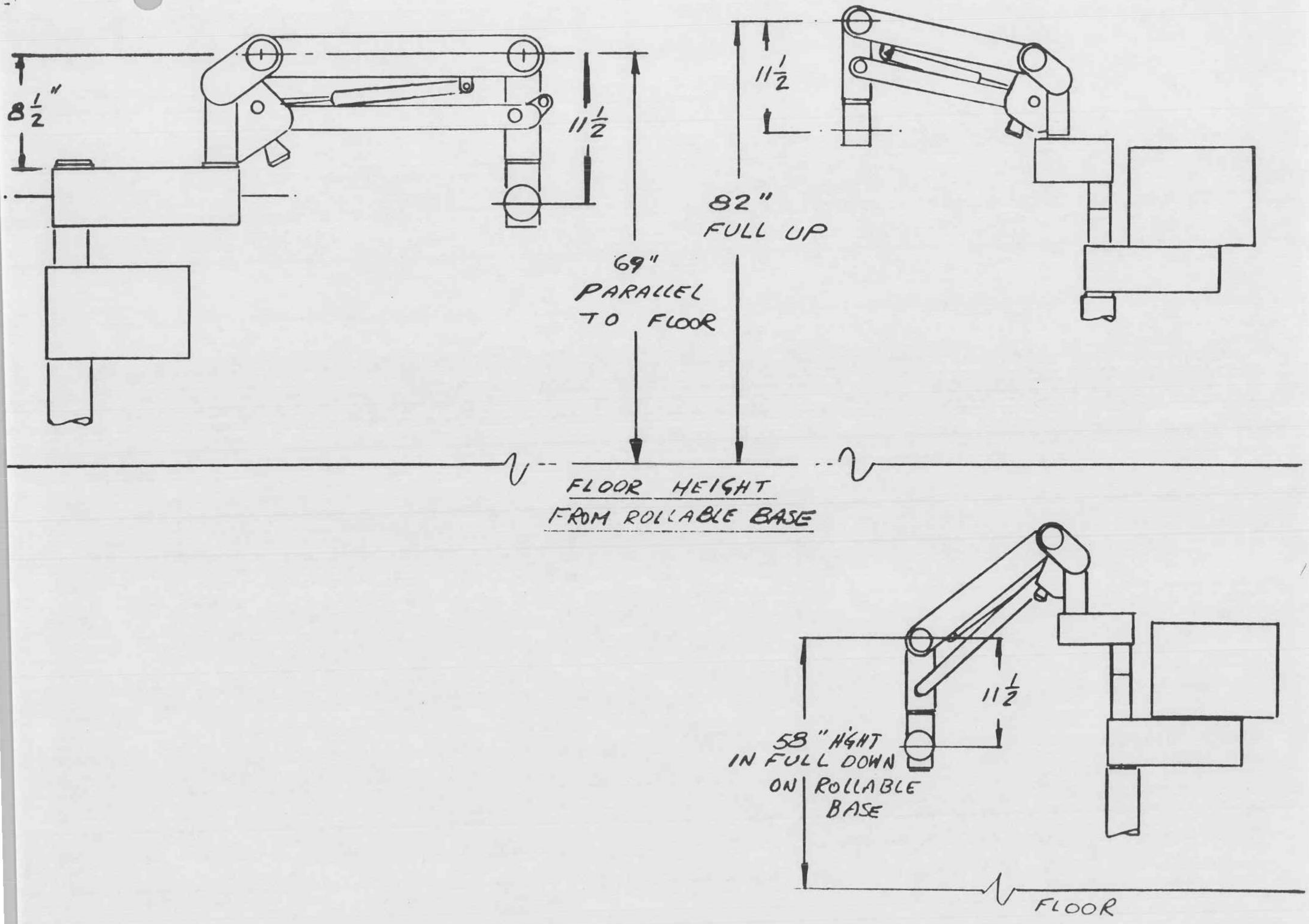

30 CM
52CM
40.5 CM

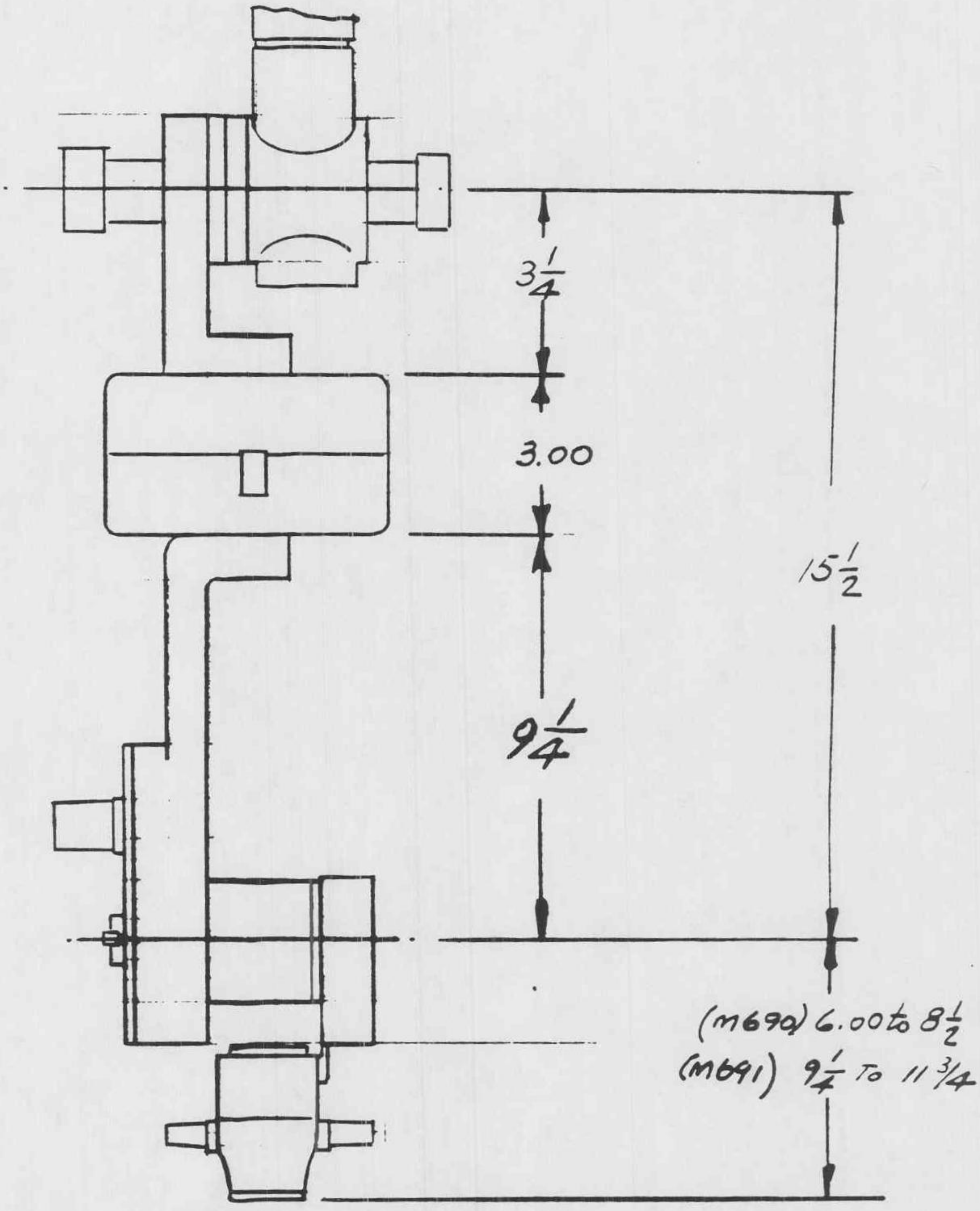
B = SWING ARM
C = PIVOT JOINT & MICROSCOPE HOLDER

Fully extended swing arm and holder is approx. 4 feet from ℄ of column A

MINI-MOUNT DATA

12-5-89 F. Sia

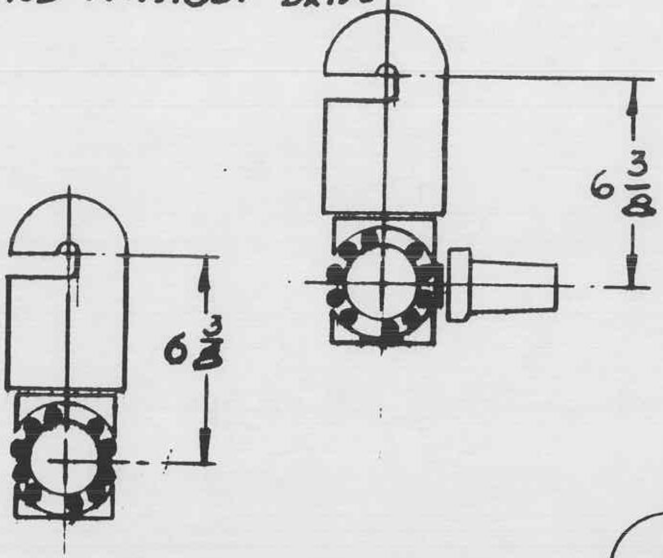

8 1/2"
11 1/2
69" PARALLEL TO FLOOR
82" FULL UP
11 1/2
FLOOR HEIGHT FROM ROLLABLE BASE
11 1/2
58" HIGHT IN FULL DOWN ON ROLLABLE BASE
FLOOR

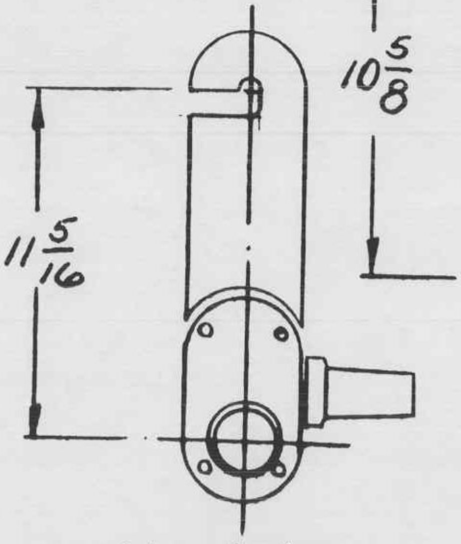

3 1/4
3.00
9 1/4
15 1/2
(M690) 6.00 to 8 1/2
(M691) 9 1/4 TO 11 3/4

OLD X-Y DIMENSIONS

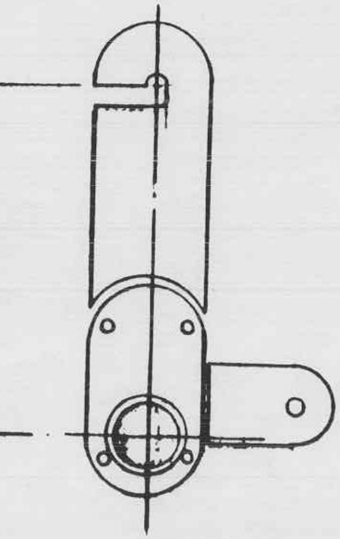
F. SIA
3-6-90

TILTABLE JOINT WITH AND WITHOUT DRIVE





M690/M691
MICROSCOPE
CARRIER



M650/M651
MICROSCOPE
CARRIER

F. 51A

VARIOUS BOLTS & SCREWS USED FOR MOUNTING M650-M651 OPTICS CARRIER

To hold carrier (399-754) to M650 4mm X 12mm

To hold carrier w/drive (399-755) to 650 4mm X 10mm

To hold carrier arm to 655 8mm X 70mm

VARIOUS BOLTS AND SCREWS USED FOR MOUNTING M690-M691 OPTICS CARRIER

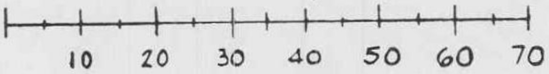
To hold X-Y together 8mm X 30MM

To hold X-Y to 690 optics carrier 8mm x 60mm

To hold carrier with lever (411-574) to 690 -
8mm X 60mm

To hold carrier with drive (411-575) to 690
8mm X 55mm

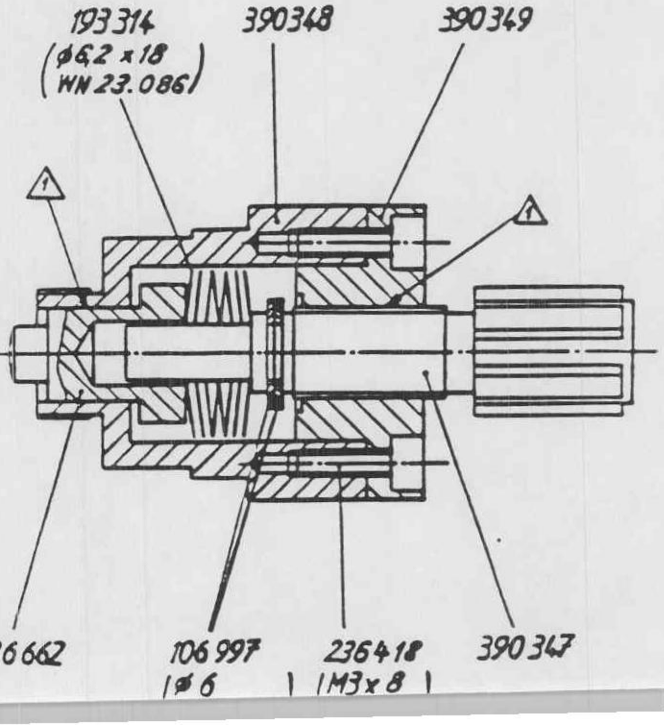
To hold rotatable adapter (422-558) to 690 -
8mm X 20mm



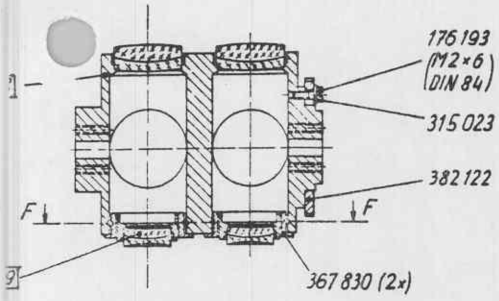
SCALE IN MM

MSV81 Schwenkarm 422 476 M650 für MS-F
MSV81 Swing arm 422 476 M650 for MS-F
MSV82 Schwenkarm 422 477 M690 für MS-F
MSV82 Swing arm 422 477 M690 for MS-F

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks
386 658 •	**Bremse komplett** **Brake assembly**
386 662	Bolzen Bolt
390 347	Gewindespindel Threaded spindle
390 348	Hülse Sleeve
390 349	Flansch Flange
106 997	Sicherungsscheibe 6 Locking washer
193 314	Tellerfeder 18x6,2x0,7 Cup spring
236 418	Schraube M3x8 Screw

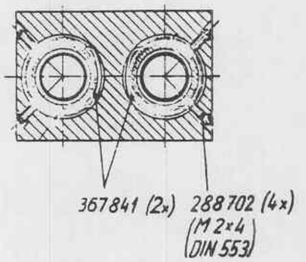

193314
(ø6,2 x 18
WN 23.086)
390348
390349
1
1
386662
106997
(ø6)
236418
(M3x8)
390347

Schnitt E-E

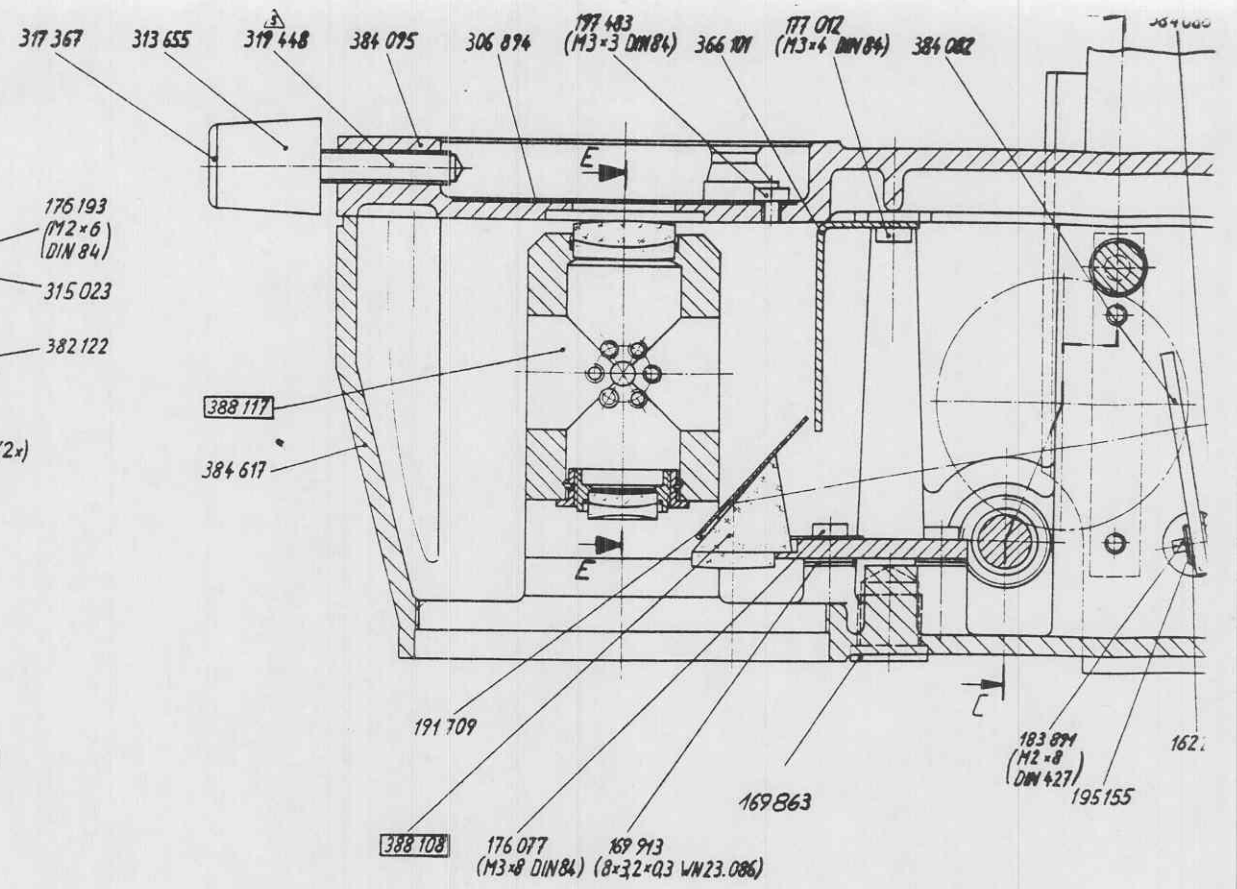


176 193
(M2×6
DIN 84)
315 023
382 122
F
F
367 830 (2×)
1
9

Schnitt F-F

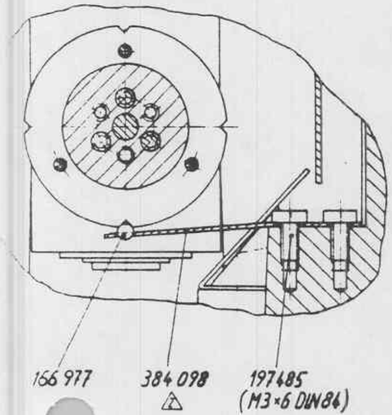


367 841 (2×)
288 702 (4×)
(M 2×4
DIN 553)

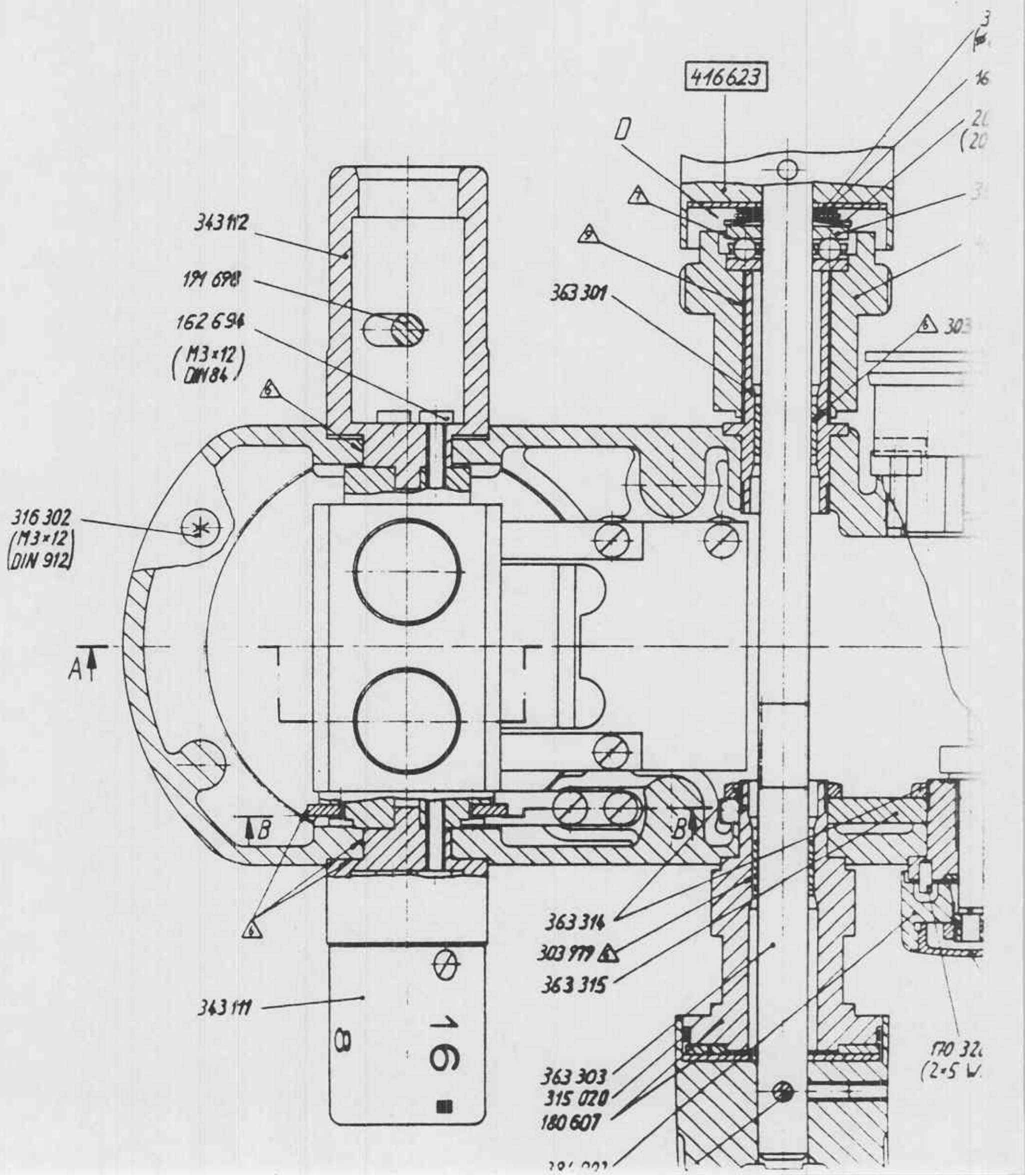


317 367
313 655
3
319 448
384 095
306 894
197 483
(M3×3 DIN 84)
366 101
177 012
(M3×4 DIN 84)
384 082
E
E
388 117
384 617
C
191 709
183 891
(M2×8
DIN 427)
195 155
162
169 863
388 108
176 077
(M3×8 DIN 84)
169 913
(8×3,2×0,3 WN 23.086)

Schnitt B-B

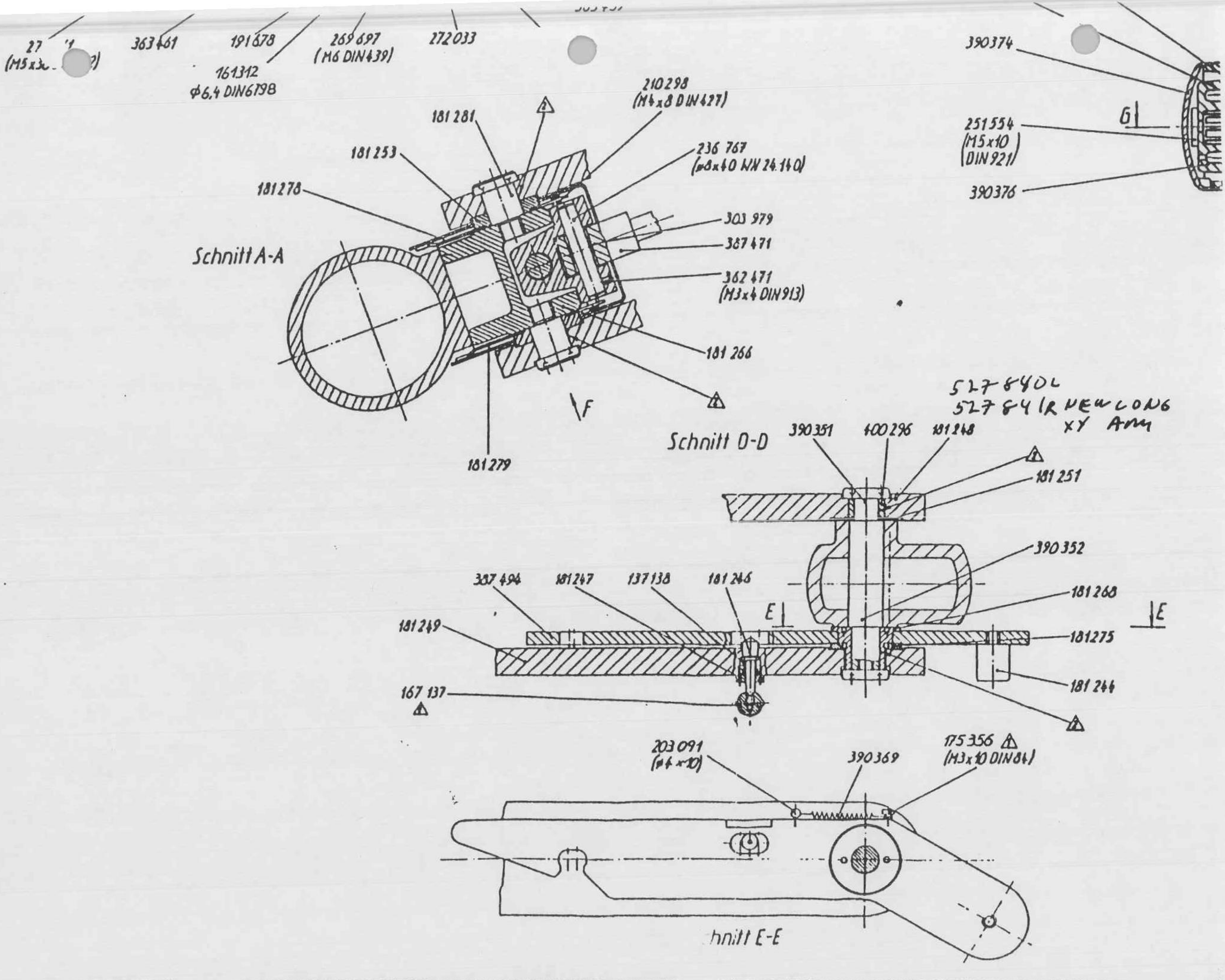


166 977
384 098
197 485
(M3×6 DIN 84)



3
16
20
(20
3
416623
D
343 112
191 698
162 694
(M3×12
DIN 84)
6
7
9
363 301
6
303
316 302
(M3×12
DIN 912)
A
B
B
C
6
363 314
303 979
363 315
343 111
16
8
363 303
315 020
180 607
170 32
(2×5 W

am nopf bung)	Moment am Fokussierknopf (Haftreibung)


27 '1 (M5x3…
363461
191678
161312 Φ6,4 DIN6798
269697 (M6 DIN439)
272033
390374
G
251554 (M5x10 DIN921)
390376
210298 (M4x8 DIN427)
181281
2
181253
236767 (Φ8x40 WN 24.140)
181278
303979
387471
Schnitt A-A
362471 (M3x4 DIN913)
181266
2
F
181279
Schnitt D-D
390351
400296
181248
1
181251
390352
387494
181247
137138
181246
181268
E
E
181249
181275
181244
167137
1
2
203091 (Φ4x10)
390369
175356 1 (M3x10 DIN84)
chnitt E-E
10
9
8

527 840L
527 841R NEW LONG
XY Arm

DATA ITEMS:

Special Equipment Repairable Items List ID# DI-ILSS-80870	None Required
Special Equipment Common and Bulk Items List ID# DI-ILSS-80871	None Required
Special Equipment Tools and Test Equipment List ID# DI-ILSS-80868	None Required
Special Equipment Commercial Service Manual ID# DPSC-A	None Required
Special Equipment Commercial Operating Instruction Manual ID# DPSC-B	None Required
Special Equipment Other Provisioning Parts List ID# DI-ILSS-80869	None Required
Training Materials ID# DI-ILSS-80872	See Instruction for Use Manual & Training Manual
Supplementary Provisioning Technical Documentation ID# DI-V-7000A	See Service & Parts Manual
Special Equipment Long Lead Time Items List ID# DI-ILSS-80866	None Required
Test Program Documentation (TPD) ID# DI-MNTY-80873	None Required
Special Equipment Consumable/Durable Support Items List ID# DI-ILSS-80867	None Required
Commercial Support Documentation (CSD) ID# DI-MISC-80557	See Instructions for Use Manual

End Item Name: Microscope, Surgical End Item Source: TTI MEDICAL

End Item NSN: 6515-01-335-9383 Reference No: Wild M650

Contract No: DLA120-92-R-0646 Kit No: A

Support Kit List

1 Item#:	2 Cage:	3 Part#:	4 Item Name:	5 U/I:	6 EC:	7 SL:	8 PLT:	9 Q/EI:	10 QUP:	11 TQR:	12 UP:	13 Ref
0001	OC9WO	384643	Bulb 12v	EA	1	X	1	2	3	24	$60	Price List
0002	OC9WO	384656	TransCover	EA	3	X	1	2	1	20	15	Price List
0003	OC9WO	180591	ClipOn Hdl	EA	3	X	1	2	1	20	25	Price List
0004	OC9WO	443792	Lever Ext	EA	3	X	1	1	1	10	13	Price List
0005	OC9WO	428328	PD Cover	EA	3	X	1	1	1	10	10	Price List

End Item Name: Microscope, Surgical End Item Source: TTI MEDICAL

End Item NSN: 6515-01-335-9383 Reference No: Wild M650

Contract No: DLA120-92-R-0646 Kit No: B1

Support Kit List

1 Item#:	Cage:	Part#:	Item Name:	U/I:	EC:	SL:	PLT:	Q/EI:	QUP:	TQR:	UP:	Ref
0001	OC9WO	427968	Casters	EA	3	X	1	4	1	20	$64	Parts Cat.Pg.MSV51/1
0002	OC9WO	388112	Cont.Cable	EA	1	X	1	1	1	5	89	Serv. Manual Pg.1

Kit No: B2 No repair parts

Kit No: C No repair parts

WILD
HEERBRUGG

SERVICE MANUAL

MSV51 MSV55

MSV51	MSV55
FUSS FAHRBAR MS–C	SCHWENKARM
MOBILE FLOOR STAND MS–C	SWING–ARM
STATIF ROULANT MS–C	BRAS–MOBILE
ESTATIVO CORREDIZO MS–C	BRAZO–MOVIL

Ausgabe 12/80
702-Ws/hmo

INHALTSVERZEICHNIS
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Resorte de gas

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Blocking lever 3
Crochet de sûreté
Gancho de seguridad

Gewichtsausgleich
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Compensation du poids
Compensación del peso

Bremse
Brake 6
Frein
Freno

Sicherheitsaufhängung
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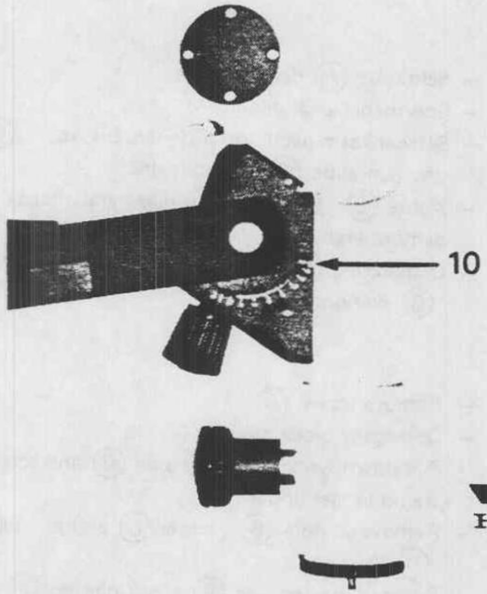
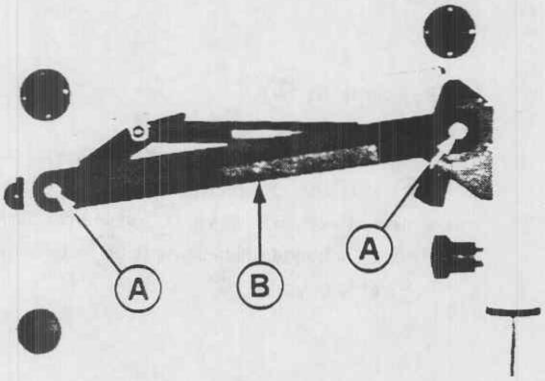


- Gewichtsausgleich auf Zahl 10 einstellen.
- 2 Schrauben Ⓐ und Paralleleiste Ⓑ demontieren.
- U/Scheibe Ⓒ und Distanzscheibe Ⓓ demontieren.

Hinweis:

Durch Verdrehen der Excenterbüchse Ⓔ kann der Lochabstand der beiden Parallelleisten Ⓑ korrigiert werden.



- Set counterbalance to figure 10
- Remove 2 screws Ⓐ and parallel batten Ⓑ
- Remove washer Ⓒ and spacer Ⓓ

Note:

Correct hole separation of parallel battens Ⓑ, by turning excentric bushing Ⓔ.

- Régler la compensation du poids sur 10.
- Enlever les 2 vis Ⓐ et le bras parallèle Ⓑ.
- Enlever la rondelle Ⓒ et la rondelle d'écartement Ⓓ.

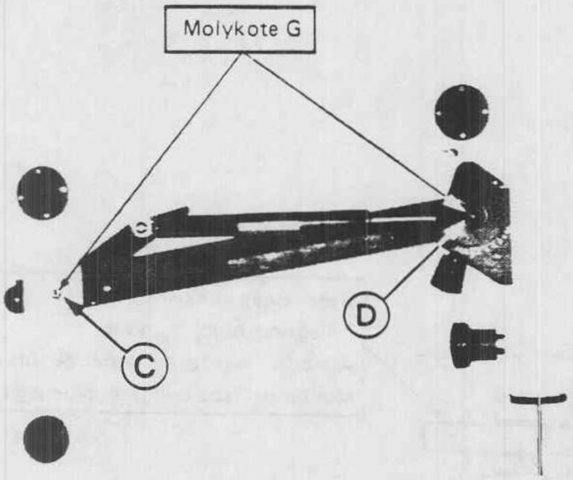
Remarque:

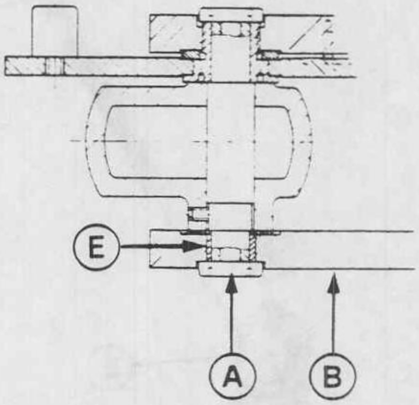
Corriger l'écart des trous des deux bras parallèles Ⓑ en tournant la douille excentrique Ⓔ.

- Regular la compensación del peso en 10.
- Quitar los 2 tornillos Ⓐ y el brazo paralelo Ⓑ.
- Quitar la arandela Ⓒ y el distanciador Ⓓ.

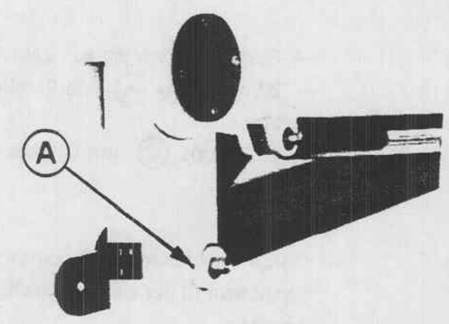
Indicación:

Corregir la distancia entre los agujeros de los dos brazos paralelos Ⓑ, girando el manguito excéntrico Ⓔ.

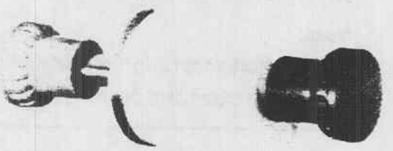




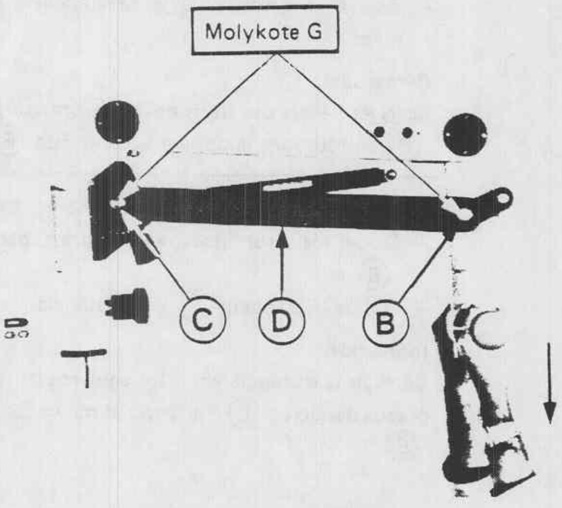
2



- Schraube Ⓐ demontieren.
- Sperrhebel ausklinken.
- Schwenkarm nach unten ziehen, bis Achse Ⓑ und Schraube Ⓒ entlastet sind.
- Achse Ⓑ, Schraube Ⓒ und Parallelleiste Ⓓ demontieren.
- Distanzring Ⓔ, Sicherungsring Ⓕ und Stift Ⓖ demontieren.

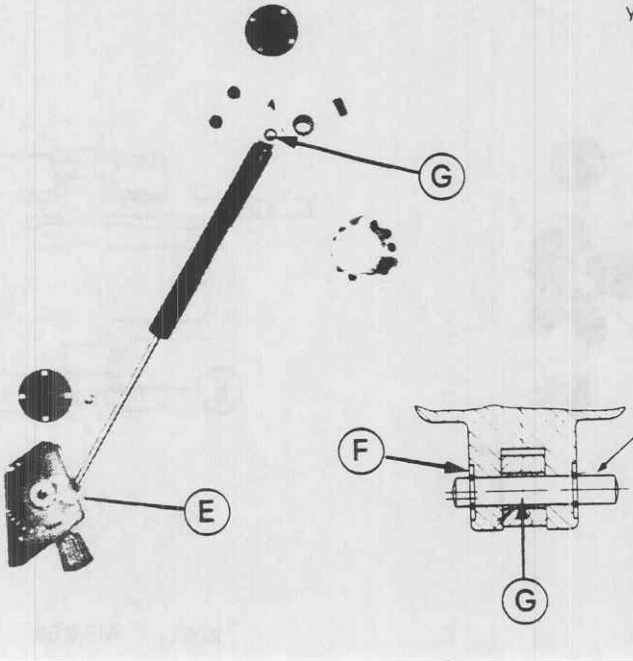


- Remove screw Ⓐ
- Desengage blocking lever
- Pull down swing-arm until axle Ⓑ and screw Ⓒ are no longer under load
- Remove spindle Ⓑ, screw Ⓒ and parallel batten Ⓓ
- Remove spacing ring Ⓔ, locking ring Ⓕ and pin Ⓖ

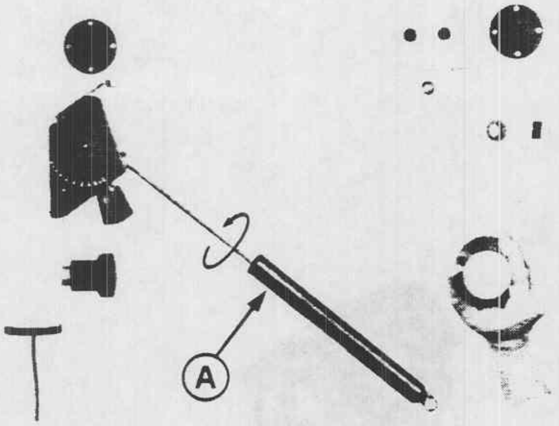


- Enlever la vis Ⓐ
- Décrocher le crochet de sûreté
- Tirer le bras mobile vers le bas jusqu'à ce que l'axe Ⓑ et la vis Ⓒ soient délestées
- Enlever l'axe Ⓑ, la vis Ⓒ et le bras parallèle Ⓓ.
- Enlever la bague d'écartement Ⓔ, la bague de sûreté Ⓕ et la goupille Ⓖ.

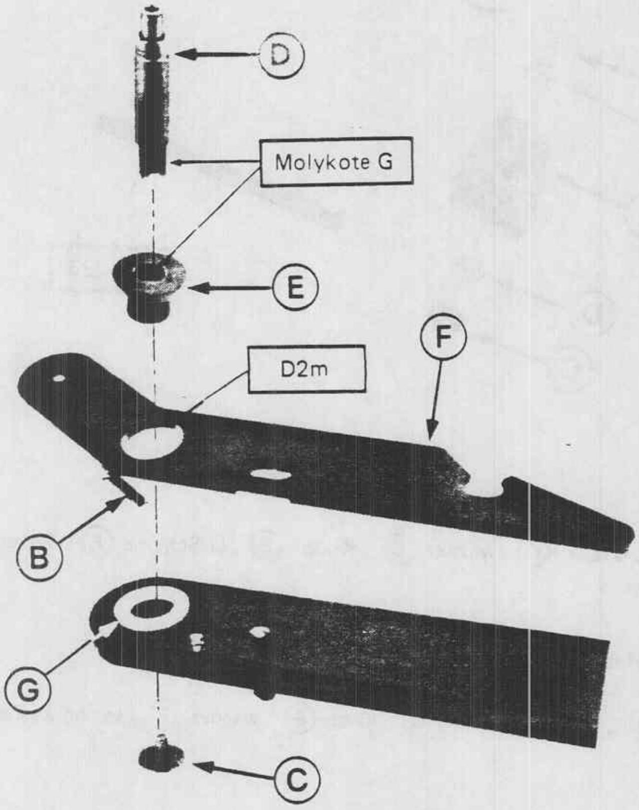
- Quitar el tornillo Ⓐ
- Desenganchar el gancho de seguridad
- Tirar el brazo movil hacia abajo hasta que el eje Ⓑ y el tornillo Ⓒ sean descargados.
- Quitar el eje Ⓑ, el tornillo Ⓒ y el brazo paralelo Ⓓ
- Quitar el distanciador Ⓔ, el anillo de seguridad Ⓕ y el perno Ⓖ.



Gegen Sperrklinke montieren.
Fit against blocking lever
A monter contre le crochet de sûreté
Montar del lado del gancho de seguridad.



Gasfeder Ⓐ ausschrauben.
Unscrew hydraulic spring Ⓐ
Dévisser le ressort à gaz Ⓐ
Destornillar el resorte de gas Ⓐ



Feder Ⓑ aushängen, Schraube Ⓒ , Achse Ⓓ , Gewindering Ⓔ , Sperrhebel Ⓕ und Scheibe Ⓖ demontieren.

Hinweis:
Kugelgriff Ⓗ mit Araldit gesichert.

Unhook spring Ⓑ , remove screw Ⓒ , axle Ⓓ , ring nut Ⓔ , blocking lever Ⓕ and washer Ⓖ .

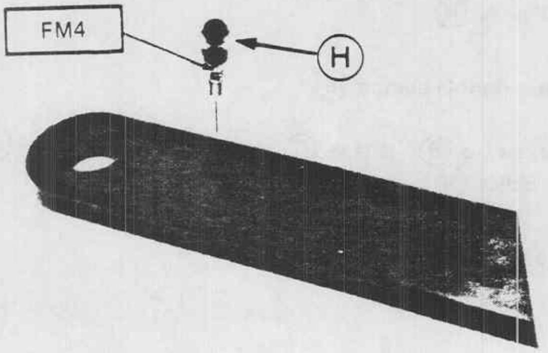
Note:
Spherical knob Ⓗ secured with Araldite

Décrocher le ressort Ⓑ . Enlever la vis Ⓒ , l'axe Ⓓ , la bague filetée Ⓔ , le crochet de sûreté Ⓕ et la rondelle Ⓖ .

Remarque:
La poignée sphérique Ⓗ est collée à l'Araldit.

Desenganchar el resorte Ⓑ y quitar el tornillo Ⓒ , el eje Ⓓ , el anillo roscado Ⓔ el gancho de seguridad Ⓕ y la arandela Ⓖ

Indicación:
La manija esférica Ⓗ está asegurada con Araldit.



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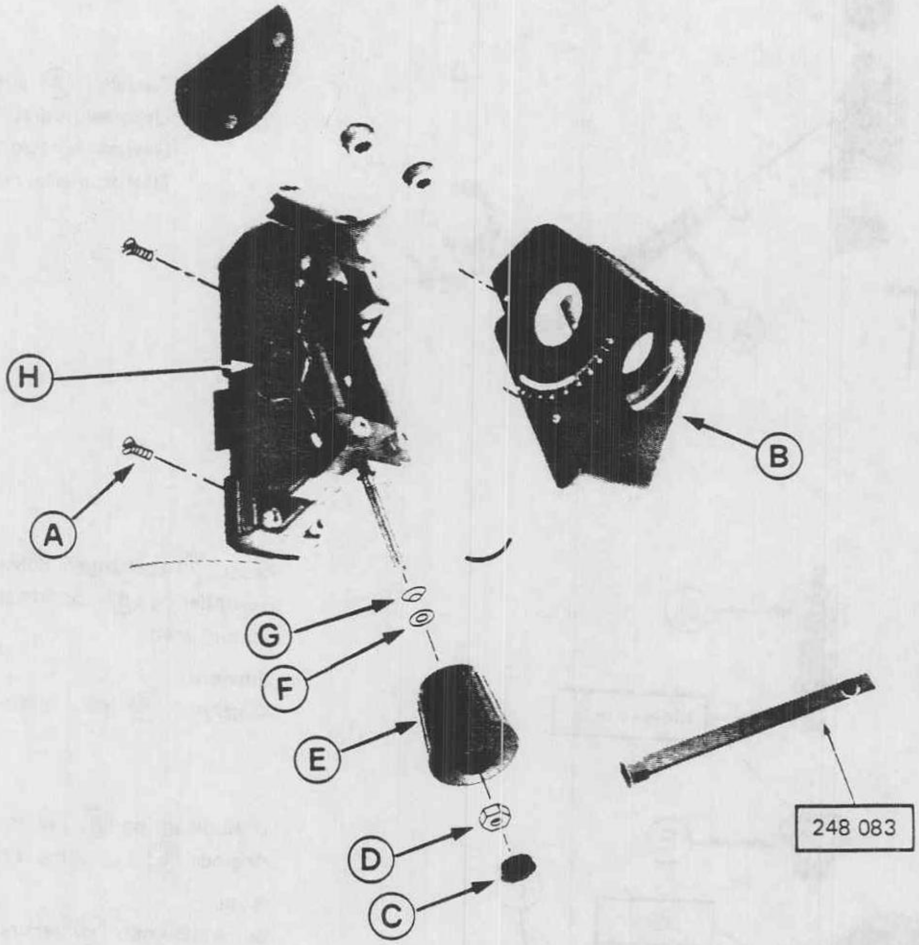


4 Schrauben Ⓐ , Abdeckblech Ⓑ , Deckel Ⓒ , Mutter Ⓓ , Knopf Ⓔ , U/Scheibe Ⓕ , Federscheibe Ⓖ und Zeiger Ⓗ demontieren.

Montagehinweis:

Durch Lösen oder Anziehen des Knopfes Ⓔ Bremsmoment einstellen.

Remove 4 screws Ⓐ , cover plate Ⓑ , cover Ⓒ , nut Ⓓ , knob Ⓔ , washer Ⓕ , spring washer Ⓖ and pointer Ⓗ

Assembly instruction:

Adjust braking torque by slackening or tightening knob Ⓔ

Enlever les 4 vis Ⓐ , la tôle de recouvrement Ⓑ , le couvercle Ⓒ , l'écrou Ⓓ , le bouton Ⓔ , la rondelle Ⓕ , la rondelle élastique Ⓖ et l'index Ⓗ .

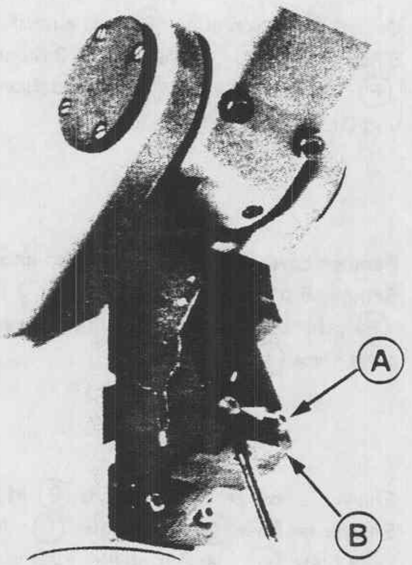
Indication pour le montage:

Régler le moment de freinage en serrant ou desserrant le bouton Ⓔ .

Quitar los 4 tornillos Ⓐ , la chapa de recubrimiento Ⓑ , la tapa Ⓒ , la tuerca Ⓓ , el botón Ⓔ , la arandela Ⓕ , la arandela elástica Ⓖ y el índice Ⓗ .

Indicación para el montaje:

Regular el momento del frenado tornillando o destornillando el botón Ⓔ .



2 Schrauben Ⓐ , Lager Ⓑ , U/Scheibe Ⓒ und Spindel Ⓓ demontieren.

Montagehinweis:
Durch Verschieben von Lager Ⓑ Axialspiel einstellen 0,05-0,1mm

Remove 2 screws Ⓐ , bearing Ⓑ , washer Ⓒ and spindle Ⓓ

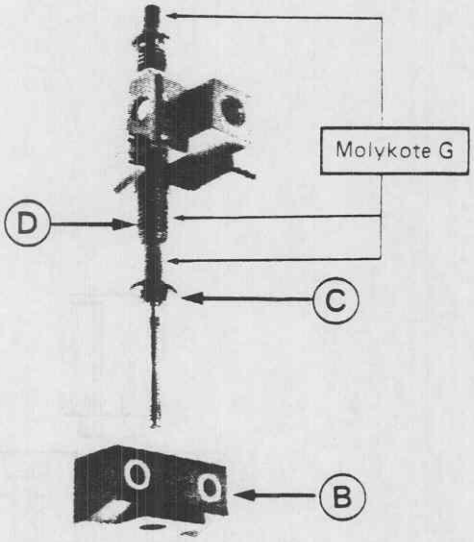
Assembly instruction:
Adjust axial slack to 0.05mm - 0.1mm by displacing bearing Ⓑ

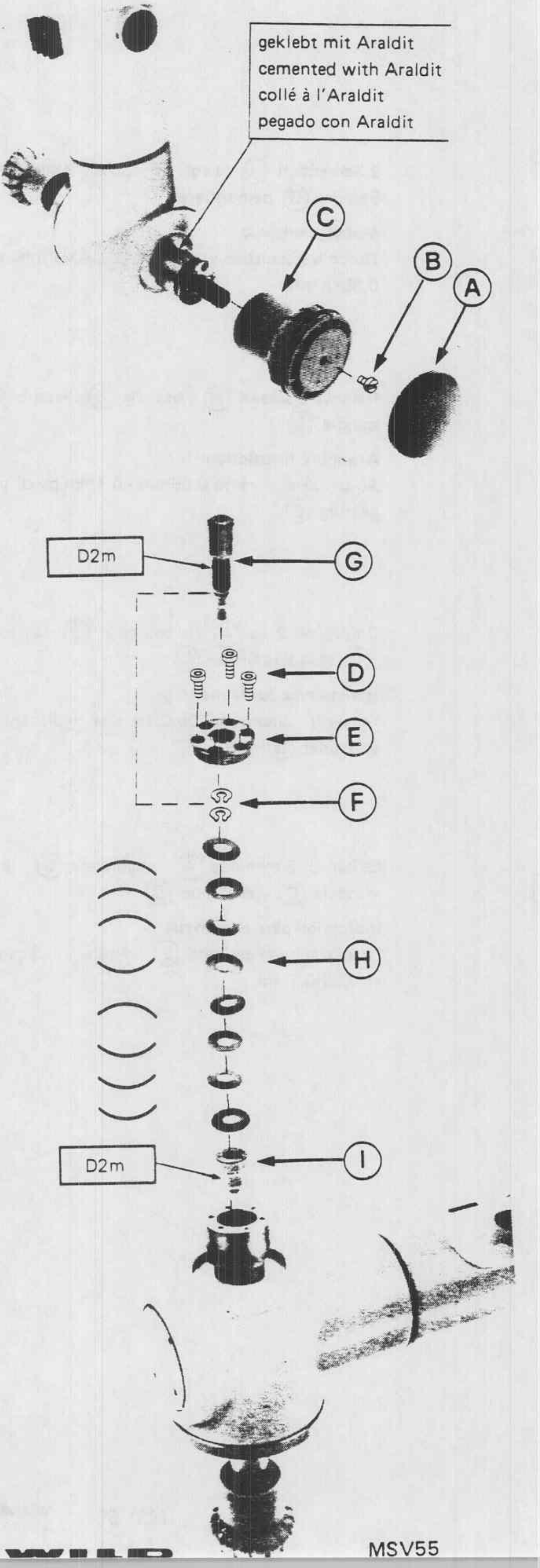
Enlever les 2 vis Ⓐ , le coussinet Ⓑ , la rondelle Ⓒ et la tige filetée Ⓓ .

Indication pour le montage:
Régler le jeu axial à 0,05-0,1mm en déplacant le coussinet Ⓑ .

Quitar los 2 tornillos Ⓐ , el cojinete Ⓑ , la arandela Ⓒ y el husillo Ⓓ

Indicación para el montaje:
Desplazando el cojinete Ⓑ , regular el juego axial en 0,05-0,1mm.




geklebt mit Araldit
cemented with Araldit
collé à l'Araldit
pegado con Araldit
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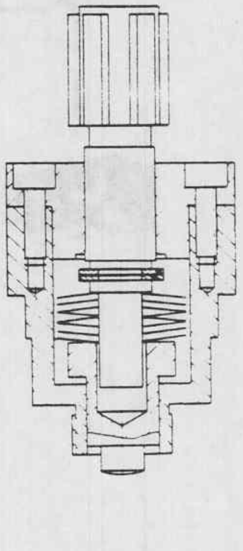
I

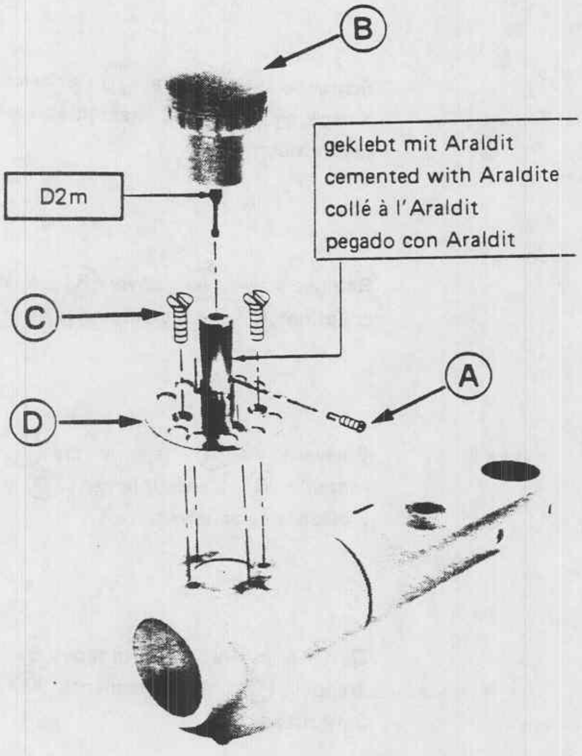
Deckel Ⓐ , Schraube Ⓑ und Knopf Ⓒ demontieren.
6 Schrauben Ⓓ , Flansch Ⓔ , 2 Sicherungsringe
Ⓕ , Gewindespindel Ⓖ , 8 Federscheiben Ⓗ
und Druckstück Ⓘ demontieren.

Remove cover Ⓐ , screw Ⓑ and knob Ⓒ
Remove 6 screws Ⓓ , flange Ⓔ , 2 locking rings
Ⓕ , threaded spindle Ⓖ , 8 spring washers Ⓗ and
press piece Ⓘ

Enlever le couvercle Ⓐ , la vis Ⓑ et le bouton Ⓒ .
Enlever les 6 vis Ⓓ , le flasque Ⓔ , les 2 circlips Ⓕ ,
l'axe fileté Ⓖ , les 8 rondelles élastiques Ⓗ et le
tampon Ⓘ .

Quitar la tapa Ⓐ el tornillo Ⓑ y el botón Ⓒ .
Quitar los 6 tornillos Ⓓ , la brida Ⓔ , las 2 arandelas
de seguridad Ⓕ , el husillo Ⓖ , las 8 arandelas
elásticas Ⓗ y el tampón Ⓘ .

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D2m
geklebt mit Araldit
cemented with Araldite
collé à l'Araldit
pegado con Araldit
C
A
D

Schraube Ⓐ , Klemmknopf Ⓑ , 4 Schrauben Ⓒ und Achsflansch Ⓓ demontieren.

Hinweis:

Die 4 Schrauben Ⓒ müssen fest angezogen und mit Loctite 361 116 gesichert sein.

Remove screw Ⓐ , clamping knob Ⓑ , 4 screws Ⓒ and axle flange Ⓓ

Note:

Thoroughly tighten 4 screws Ⓒ and secure with Loctite 361 116

Enlever la vis Ⓐ , le bouton de serrage Ⓑ , les 4 vis Ⓒ et le flasque Ⓓ .

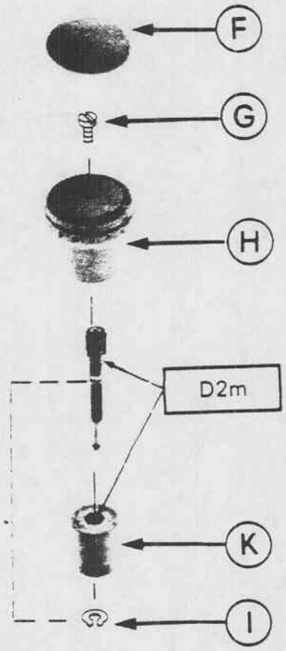
Indication:

Les 4 vis Ⓒ doivent être serrées bien fermements et doivent être assurées au Loctite 361 116

Quitar el tornillo Ⓐ , el botón de sujeción Ⓑ , los 4 tornillos Ⓒ y la brida Ⓓ .

Indicación:

Los 4 tornillos Ⓒ deben estar apretados fuertemente y ser asegurados con goma-laca.

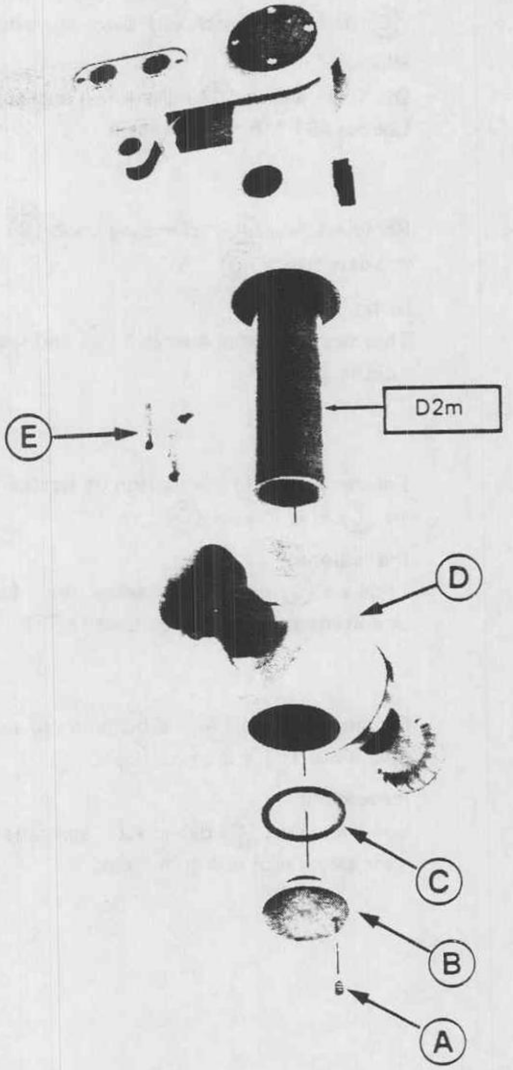


Deckel Ⓕ , Schraube Ⓖ , Knopf Ⓗ , Sicherungsring Ⓘ und Büchse Ⓚ demontieren.

Remove cover Ⓕ , screw Ⓖ , knob Ⓗ , locking ring Ⓘ and bush Ⓚ

Enlever le couvercle Ⓕ , la vis Ⓖ , le bouton Ⓗ , le circlip Ⓘ et la douille Ⓚ .

Quitar la tapa Ⓕ , el tornillo Ⓖ , el botón Ⓗ , el anillo de retención Ⓘ y el casquillo Ⓚ

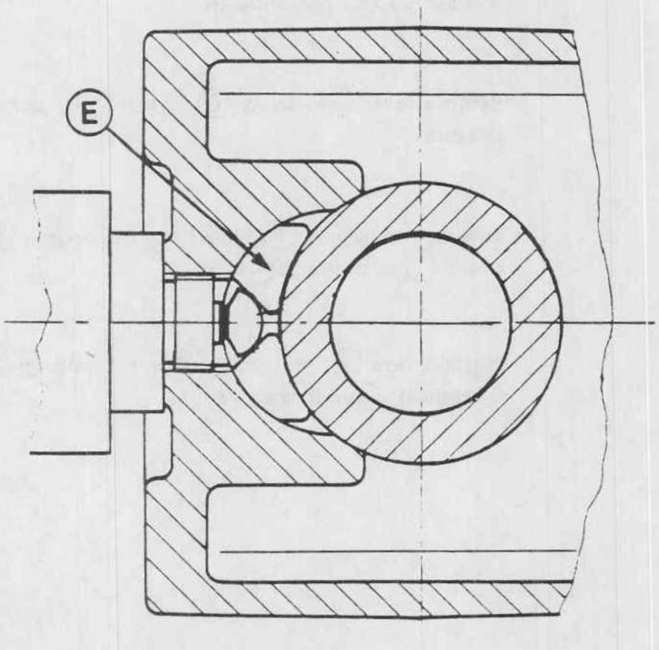


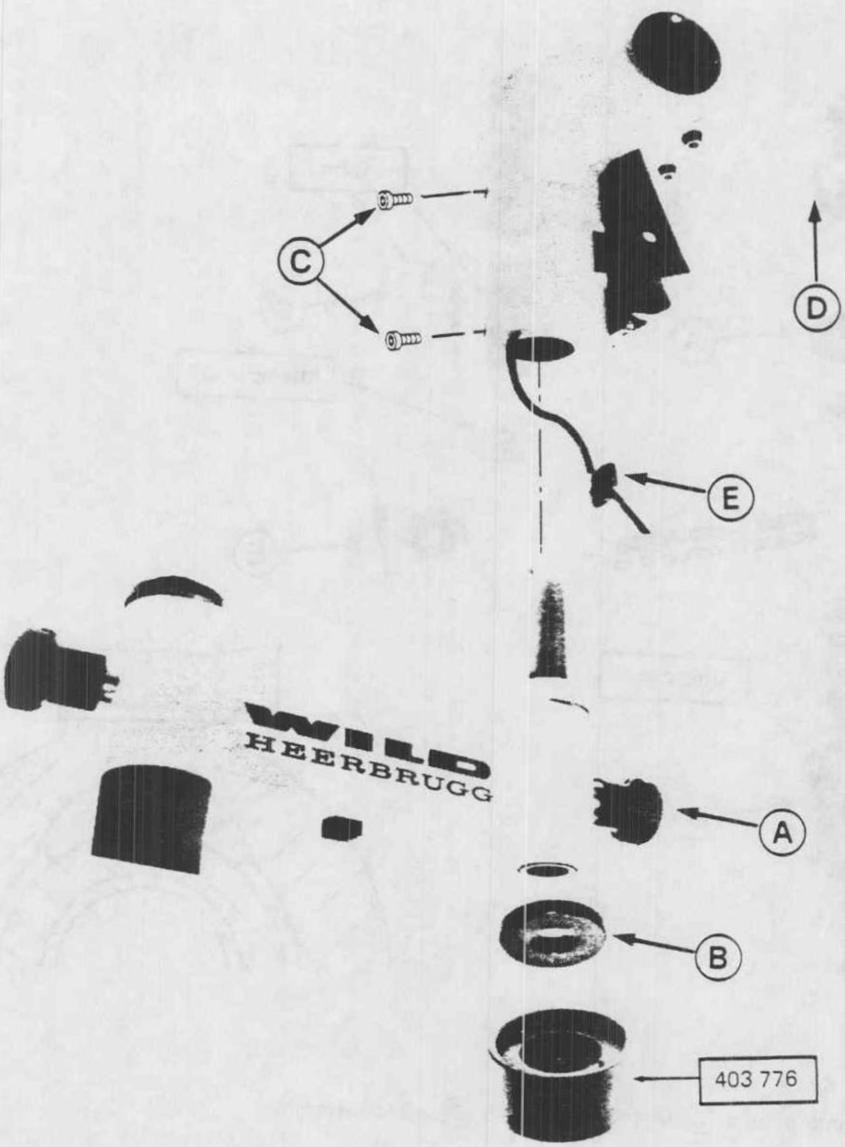
Schraube Ⓐ , Deckel Ⓑ , Scheibe Ⓒ , Kupplung Ⓓ und 3 Klemmbacken Ⓔ demontieren.

Remove screw Ⓐ , cover Ⓑ , washer Ⓒ , coupling Ⓓ and 3 clamping jaws Ⓔ

Enlever la vis Ⓐ , le couvercle Ⓑ , la rondelle Ⓒ , l'accouplement Ⓓ et les 3 mâchoires de serrage Ⓔ

Quitar el tornillo Ⓐ , la tapa Ⓑ , la arandela Ⓒ , el acoplamiento Ⓓ y las 3 mordazas Ⓔ



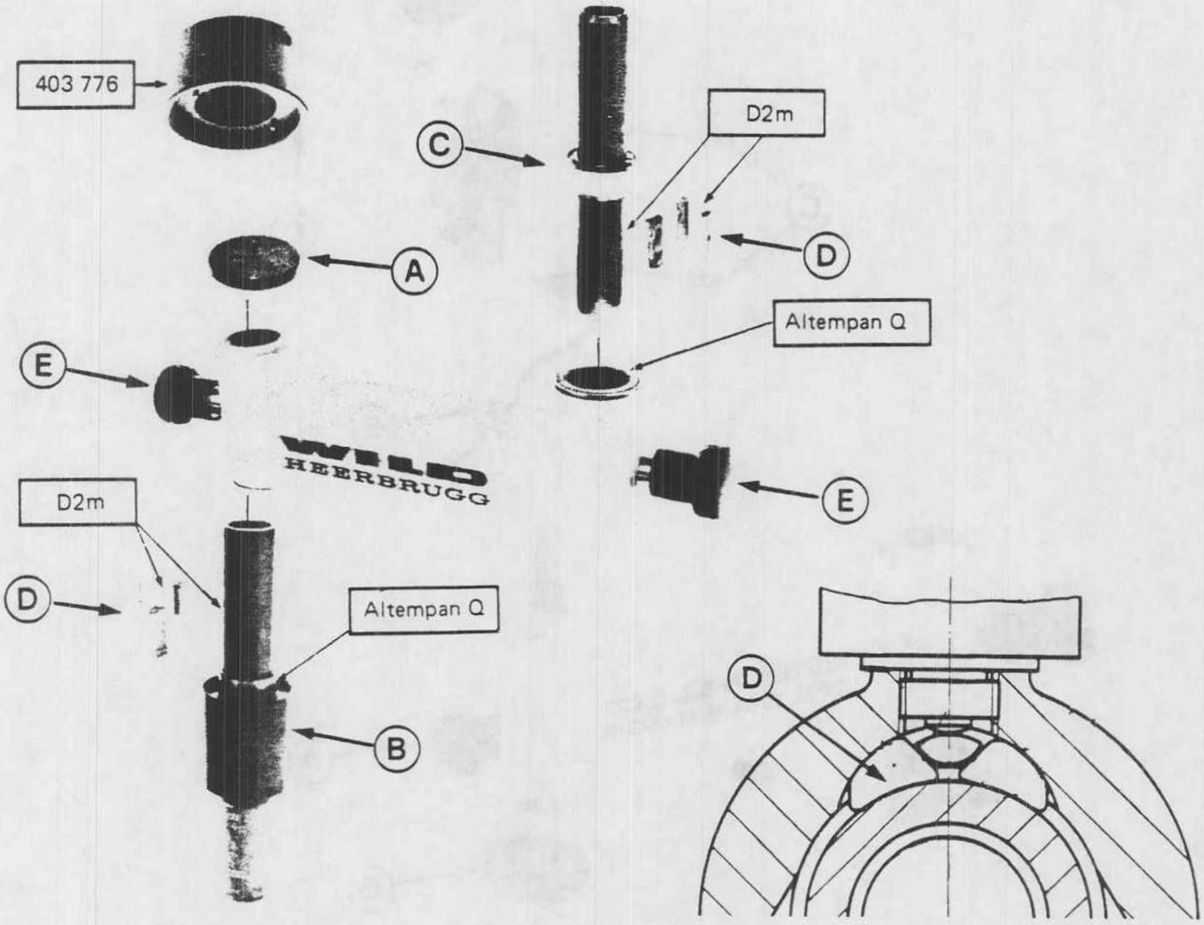


Bremse Ⓐ klemmen. Deckel Ⓑ, 2 Schrauben Ⓒ demontieren. Vertikalschwenkarm Ⓓ mit Scheibe Ⓔ und Kabel nach oben ausfahren.

Clamp brake Ⓐ. Remove cover Ⓑ, 2 screws Ⓒ. Carefully pull off vertical swing-arm Ⓓ upwards, including washer Ⓔ and cable

Serrer le frein Ⓐ. Enlever le couvercle Ⓑ et les 2 vis Ⓒ. Enlever le bras mobile vertical Ⓓ, le disque Ⓔ et le câble, en le tirant vers le haut.

Apretar el freno Ⓐ. Quitar la tapa Ⓑ y los 2 tornillos Ⓒ. Levantar el brazo vertical Ⓓ, el disco Ⓔ y el cable.



Deckel Ⓐ , Lagerrohre Ⓑ und Ⓒ und Klemmbacken Ⓓ demontieren.

Hinweis:

Die Nadel- und Trockenlager sind eingepresst und die Innenringe warm aufgezogen. Demontage Bremsen Ⓔ siehe Seite 6.

Remove cover Ⓐ , bearing tubes Ⓑ and Ⓒ and clamping jaws Ⓓ

Note:

The pin bearings and dry bearings are pressed into position and the inside washers have been fitted by being heated and allowed to shrink into position. To dismantle brakes Ⓔ , see page 6.

Enlever le couvercle Ⓐ , les tubes Ⓑ et Ⓒ , et les mâchoires de serrage Ⓓ .

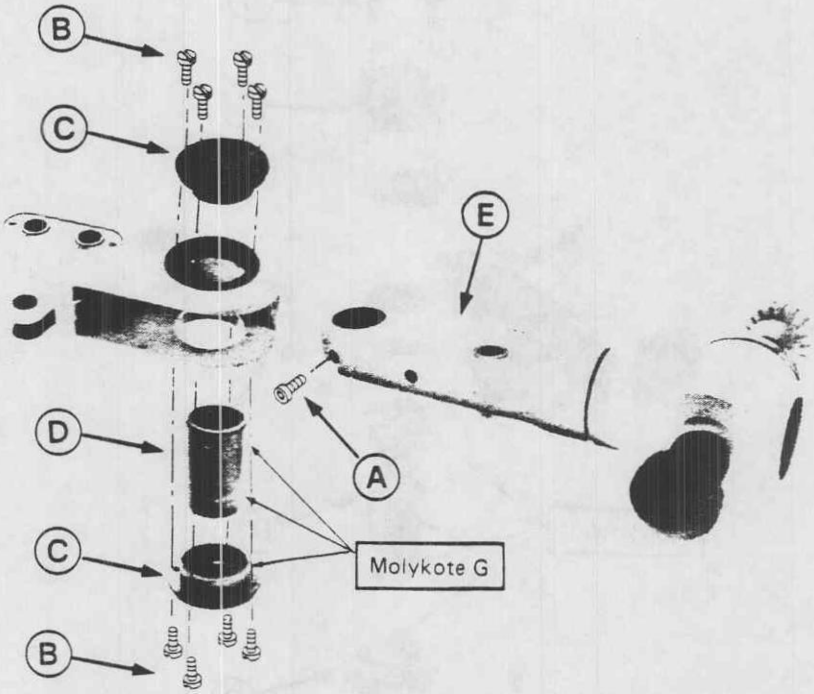
Indication:

Les roulements à aiguilles et les coussinets à sec sont montés par pression, et les bagues intérieures des roulements emmanchées à chaud. Démontage des freins Ⓔ . Voir page 6

Quitar la tapa Ⓐ , los tubos Ⓑ y Ⓒ y las mordazas Ⓓ .

Indicación:

El cojinete de agujas y los cojinetes a seco son montados a presión y el anillo interior del cojinete es montado caliente. Desarmado de los frenos Ⓔ , vea pág 6

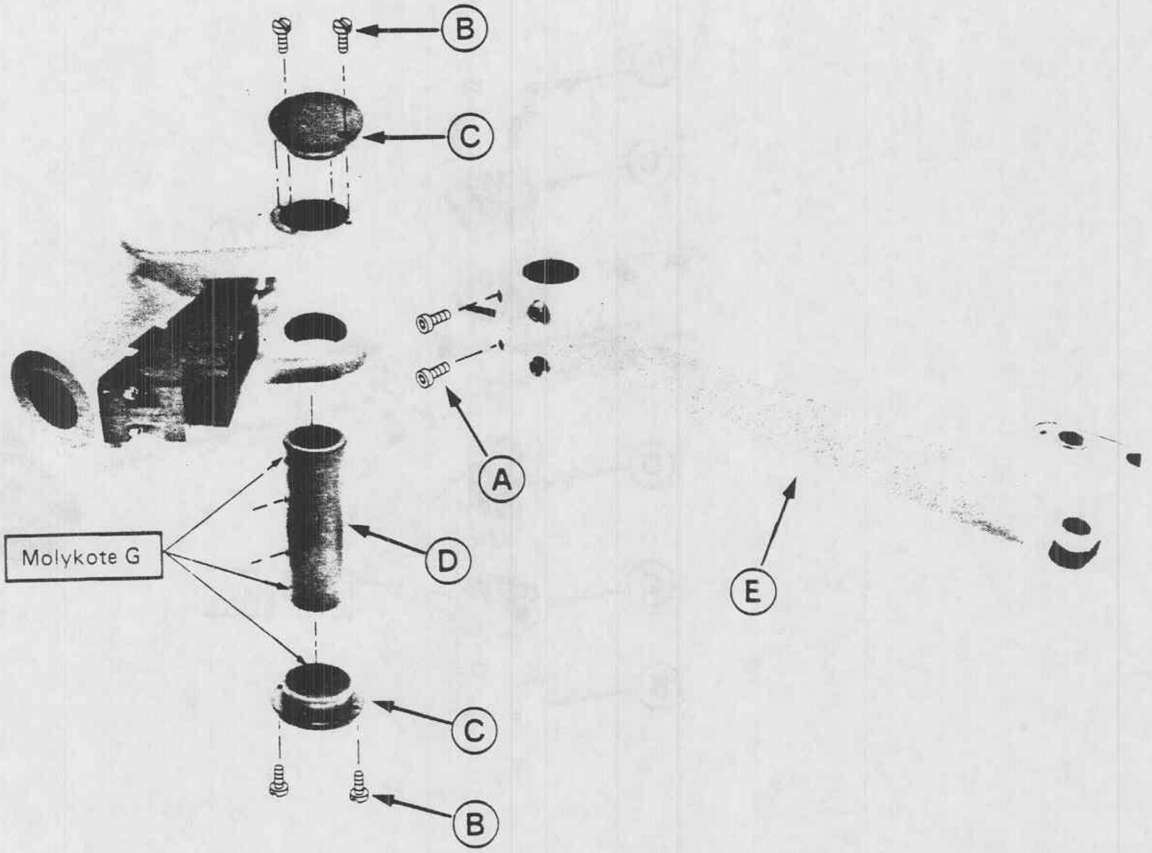


Schraube Ⓐ , 8 Schrauben Ⓑ , 2 Flansche Ⓒ , Achse Ⓓ und Arm Ⓔ demontieren.

Remove screw Ⓐ , 8 screws Ⓑ , 2 flanges Ⓒ , axle Ⓓ and arm Ⓔ

Enlever la vis Ⓐ , les 8 vis Ⓑ , les 2 flasques Ⓒ , l'axe Ⓓ et le bras Ⓔ .

Quitar el tornillo Ⓐ , los 8 tornillos Ⓑ , las 2 bridas Ⓒ , el eje Ⓓ y el brazo Ⓔ .

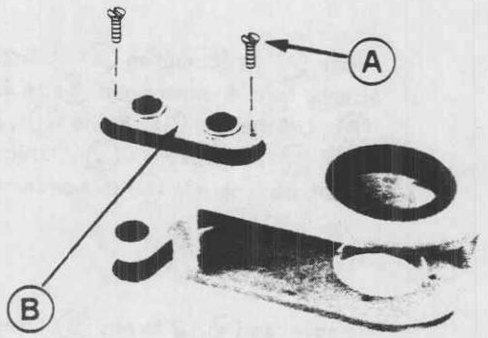


2 Schrauben Ⓐ, 8 Schrauben Ⓑ, 2 Flansche Ⓒ, Achse Ⓓ und Arm Ⓔ demontieren.

Remove 2 screws Ⓐ, 8 screws Ⓑ, 2 flanges Ⓒ, axle Ⓓ and arm Ⓔ

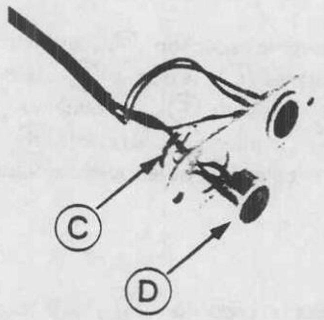
Enlever les 2 vis Ⓐ, les 8 vis Ⓑ, les 2 flasques Ⓒ, l'axe Ⓓ et le bras Ⓔ.

Quitar los 2 tornillos Ⓐ, los 8 tornillos Ⓑ, las 2 bridas Ⓒ, el eje Ⓓ y el brazo Ⓔ.



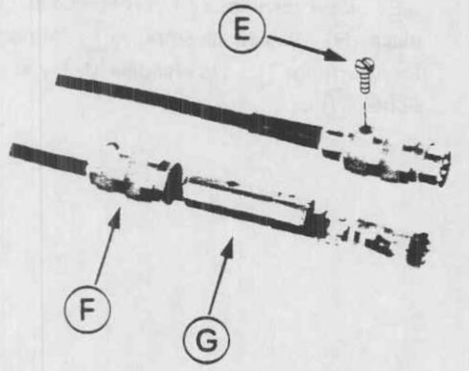
2 Schrauben Ⓐ, Steckerplatte Ⓑ, Gewindering Ⓒ und Stecker Ⓓ demontieren.
Schraube Ⓔ demontieren. Hülsen Ⓕ und Ⓖ nach hinten ziehen.

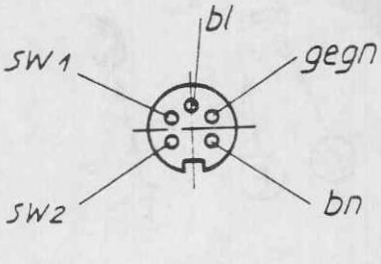
Remove 2 screws Ⓐ, socket plate Ⓑ, ring nut Ⓒ and socket Ⓓ
Remove screw Ⓔ, pull sleeves Ⓕ and Ⓖ towards rear



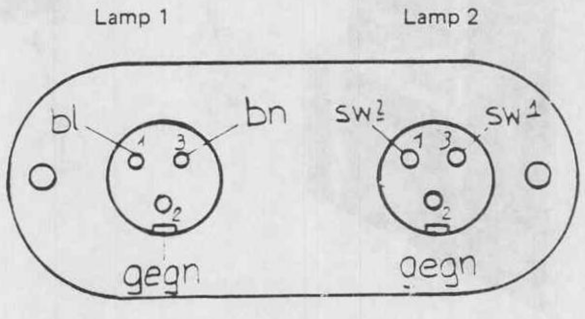
Enlever les 2 vis Ⓐ, la plaque des prises Ⓑ, la bague filetée Ⓒ et la prise Ⓓ.
Enlever la vis Ⓔ. Tirer les douilles Ⓕ et Ⓖ vers l'arrière.

Quitar los 2 tornillos Ⓐ, la placa de enchufes Ⓑ, el anillo roscado Ⓒ y el enchufe Ⓓ.
Quitar el tornillo Ⓔ. Empujar los casquillos Ⓕ y Ⓖ hacia atrás.

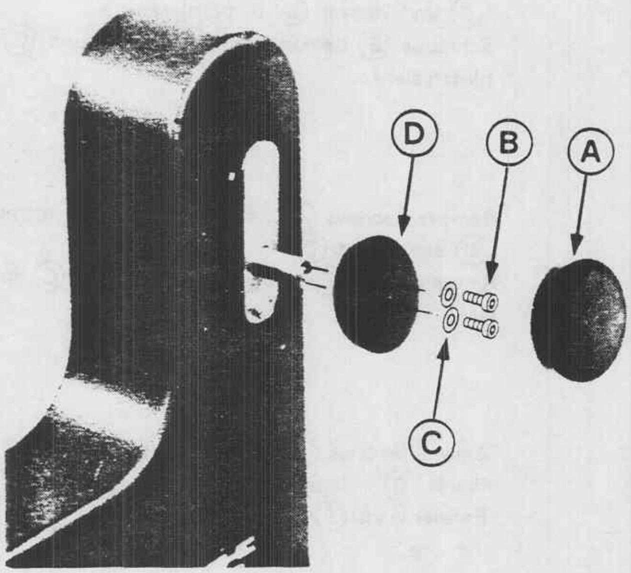



bl
SW1
gegn
SW2
bn

Von Lötseite gesehen.
view of soldered face
Vu du côté des soudures.
Visto desde el lado de soldar


Lamp 1
Lamp 2
bl
bn
sw2
sw1
1
3
2
1
3
2
gegn
gegn

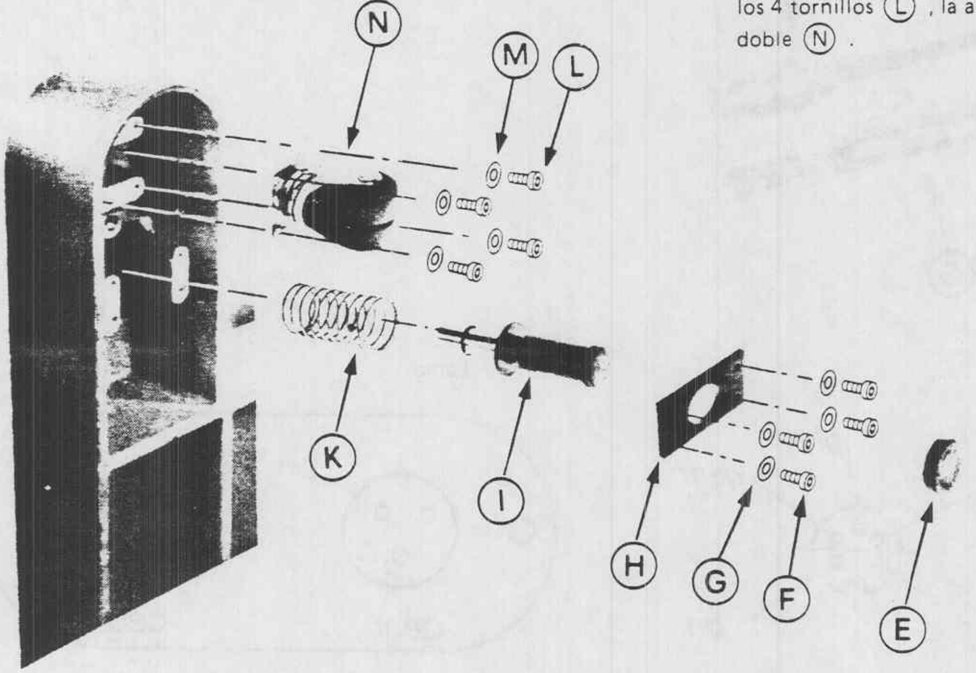
Kappe Ⓐ , 2 Schrauben Ⓑ , U/Scheiben Ⓒ , Scheibe Ⓓ , Bremsscheibe Ⓔ , 4 Schrauben Ⓕ , U/Scheiben Ⓖ , Platte Ⓗ , Stössel Ⓘ , Feder Ⓚ , 4 Schrauben Ⓛ , U/Scheibe Ⓜ und Doppellenkrolle Ⓝ demontieren.



Remove cap Ⓐ , 2 screws Ⓑ , washers Ⓒ , disk Ⓓ , brake disk Ⓔ , 4 screws Ⓕ , washers Ⓖ , plate Ⓗ , plug Ⓘ , spring Ⓚ , 4 screws Ⓛ , washer Ⓜ and double guide roller Ⓝ

Enlever le capuchon Ⓐ , les 2 vis Ⓑ , les rondelles Ⓒ , le disque Ⓓ , le disque à frein Ⓔ , les 4 vis Ⓕ , les rondelles Ⓖ , la plaque Ⓗ , le pilon Ⓘ , le ressort Ⓚ , les 4 vis Ⓛ , la rondelle Ⓜ et le rouleau double Ⓝ .

Quitar el capuchón Ⓐ , los 2 tornillos Ⓑ , las arandelas Ⓒ , el disco Ⓓ , el disco de freno Ⓔ , los 4 tornillos Ⓕ , las arandelas Ⓖ , la placa Ⓗ , la biela de empuje Ⓘ , el resorte Ⓚ , los 4 tornillos Ⓛ , la arandela Ⓜ y el rodillo doble Ⓝ .



WILD
HEERBRUGG

SERVICE MANUAL

MSV56,57

SCHWENKGELENK
TILTABLE JOINT
JOINT PIVOTANT
ARTICULACION ORIENTABLE

Ausgabe 12/80
702-Ws/hmo

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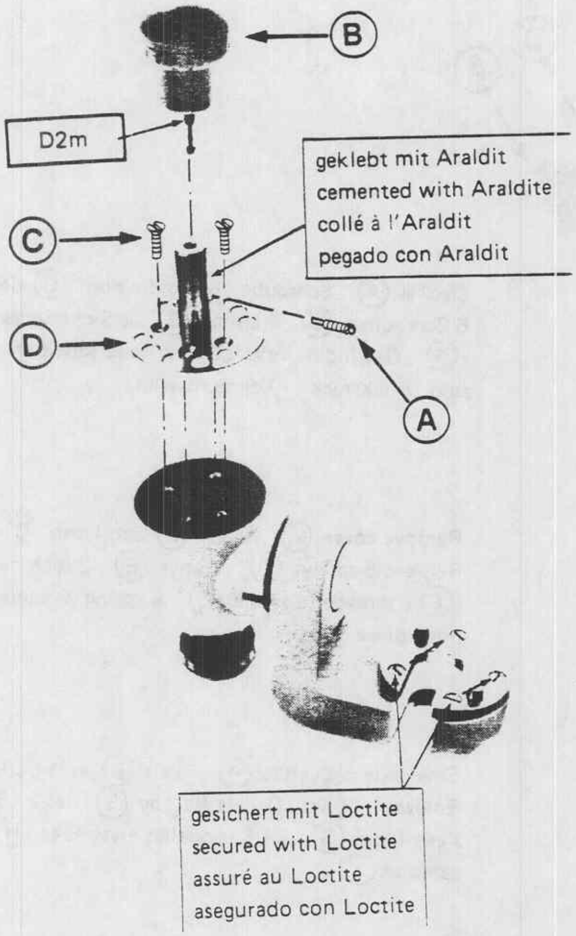

B
D2m
geklebt mit Araldit
cemented with Araldite
collé à l'Araldit
pegado con Araldit
C
D
A
gesichert mit Loctite
secured with Loctite
assuré au Loctite
asegurado con Loctite

Schraube Ⓐ , Klemmknopf Ⓑ , 4 Schrauben Ⓒ und Achsflansch Ⓓ demontieren.

Hinweis:
Die 4 Schrauben Ⓒ müssen fest angezogen und mit Loctite 361 116 gesichert sein.

Remove screw Ⓐ , clamping knob Ⓑ , 4 screws Ⓒ and axle flange Ⓓ

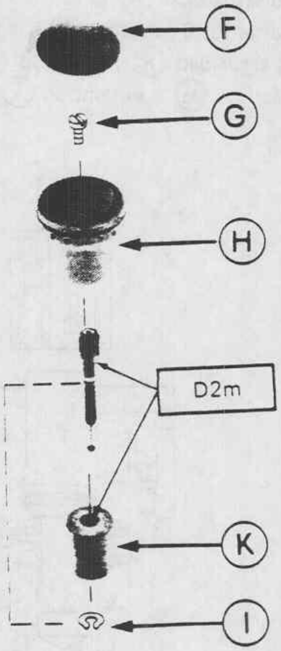
Note:
Thoroughly tighten 4 screws Ⓒ and secure with Loctite 361 116

Enlever la vis Ⓐ , le bouton de serrage Ⓑ , les 4 vis Ⓒ et le flasque Ⓓ .

Indication:
Les 4 vis Ⓒ doivent être serrées bien fermements et doivent être assurées au Loctite 361 116

Quitar el tornillo Ⓐ , el botón de sujeción Ⓑ , los 4 tornillos Ⓒ y la brida Ⓓ .

Indicación:
Los 4 tornillos Ⓒ deben estar apretados fuertemente y ser asegurados con goma-laca.

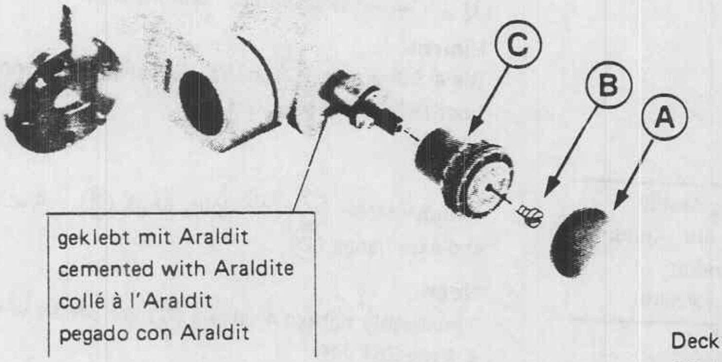


Deckel Ⓕ , Schraube Ⓖ , Knopf Ⓗ , Sicherungsring Ⓘ und Büchse Ⓚ demontieren.

Remove cover Ⓕ , screw Ⓖ , knob Ⓗ , locking ring Ⓘ and bush Ⓚ

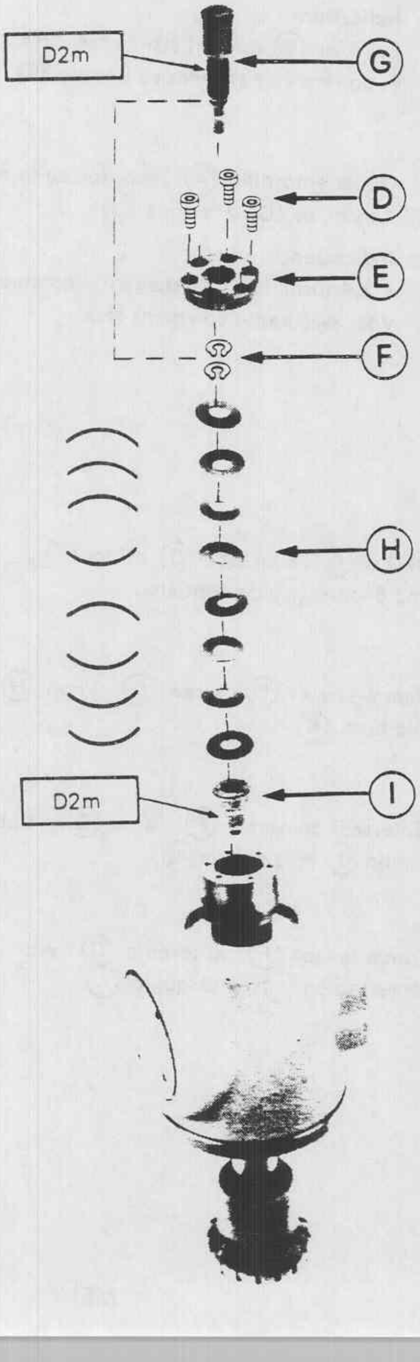
Enlever le couvercle Ⓕ , la vis Ⓖ , le bouton Ⓗ , le circlip Ⓘ et la douille Ⓚ .

Quitar la tapa Ⓕ , el tornillo Ⓖ , el botón Ⓗ , el anillo de retención Ⓘ y el casquillo Ⓚ .



geklebt mit Araldit
cemented with Araldite
collé à l'Araldit
pegado con Araldit

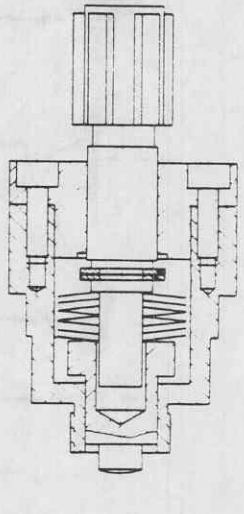
Deckel Ⓐ , Schraube Ⓑ und Knopf Ⓒ demontieren.
6 Schrauben Ⓓ , Flansch Ⓔ , 2 Sicherungsringe Ⓕ , Gewindespindel Ⓖ , 8 Federscheiben Ⓗ und Druckstück Ⓘ demontieren.



Remove cover Ⓐ , screw Ⓑ and knob Ⓒ
Remove 6 screws Ⓓ , flange Ⓔ , 2 locking rings Ⓕ , threaded spindle Ⓖ , 8 spring washers Ⓗ and press piece Ⓘ.

Enlever le couvercle Ⓐ , la vis Ⓑ et le bouton Ⓒ .
Enlever les 6 vis Ⓓ , le flasque Ⓔ , les 2 circlips Ⓕ , l'axe fileté Ⓖ , les 8 rondelles élastiques Ⓗ et le tampon Ⓘ .

Quitar la tapa Ⓐ el tornillo Ⓑ y el botón Ⓒ .
Quitar los 6 tornillos Ⓓ , la brida Ⓔ , las 2 arandelas de seguridad Ⓕ , el husillo Ⓖ , las 8 arandelas elásticas Ⓗ y el tampón Ⓘ .

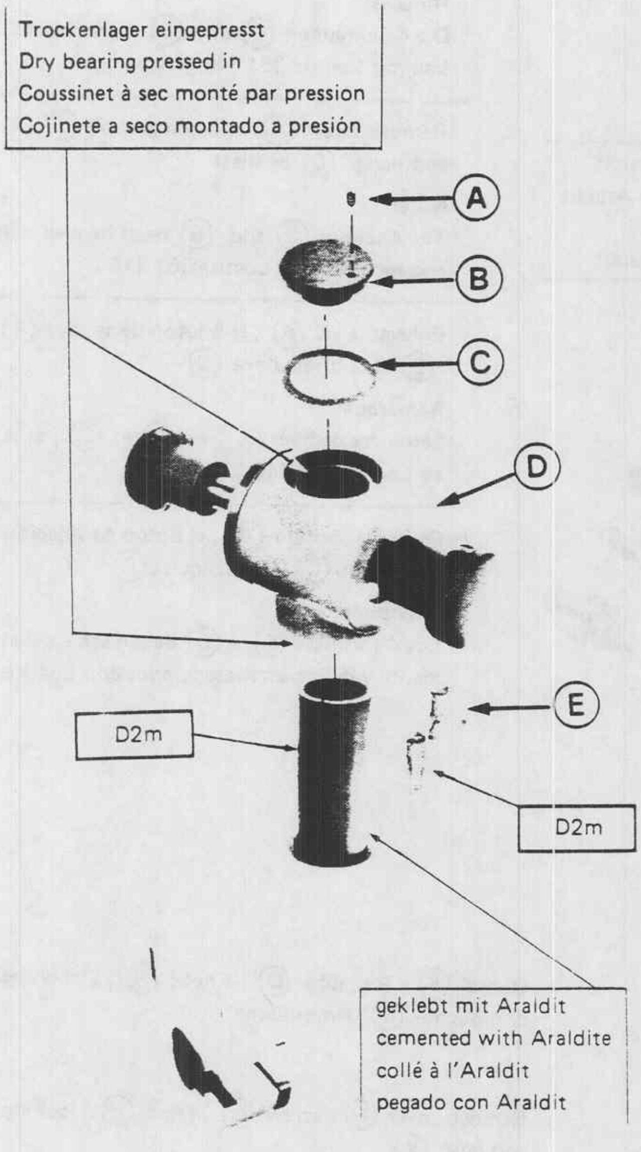


Schraube Ⓐ, Deckel Ⓑ, Scheibe Ⓒ, Kupplung Ⓓ und Klemmbacken Ⓔ demontieren.

Remove screw Ⓐ, cover Ⓑ, washer Ⓒ, coupling Ⓓ and clamping jaws Ⓔ

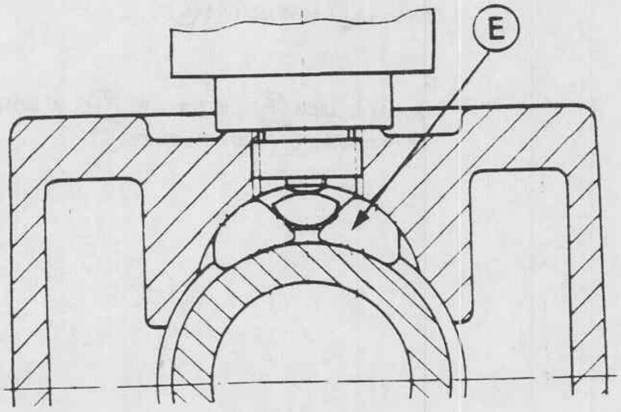
Enlever la vis Ⓐ, le couvercle Ⓑ, la rondelle Ⓒ, l'accouplement Ⓓ et les mâchoires Ⓔ.

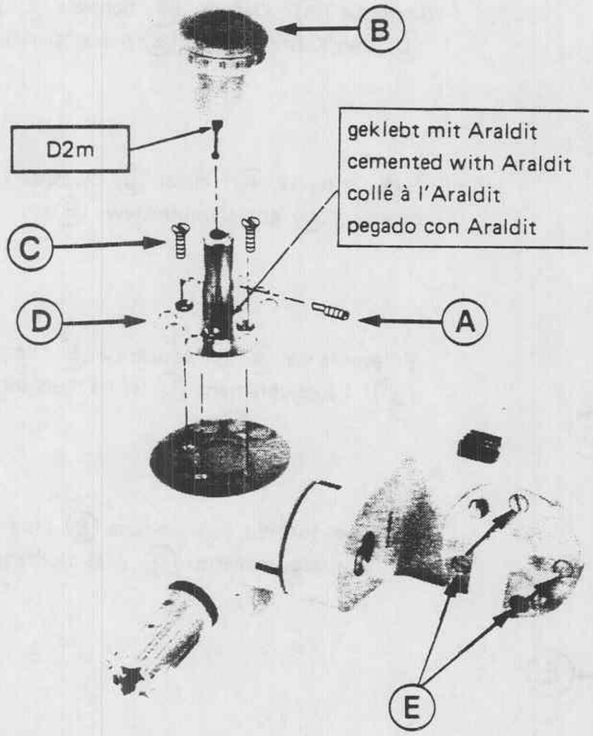
Quitar el tornillo Ⓐ, la tapa Ⓑ, la arandela Ⓒ, el acoplamiento Ⓓ y las mordazas Ⓔ.



Trockenlager eingepresst
Dry bearing pressed in
Coussinet à sec monté par pression
Cojinete a seco montado a presión

geklebt mit Araldit
cemented with Araldite
collé à l'Araldit
pegado con Araldit





Schraube Ⓐ , Klemmknopf Ⓑ , 4 Schrauben Ⓒ und Achsflansch Ⓓ demontieren.

Hinweis:

Die 4 Schrauben Ⓒ und Ⓔ müssen fest angezogen und mit Loctite 361 116 gesichert sein.

Remove screw Ⓐ , clamping knob Ⓑ , 4 screws Ⓒ and flange Ⓓ of shaft

Note:

The 4 screws Ⓒ and Ⓔ must be well tightened and secured with Loctite 361 116

Enlever la vis Ⓐ , le bouton de serrage Ⓑ , les 4 vis Ⓒ et la bride d'axe Ⓓ .

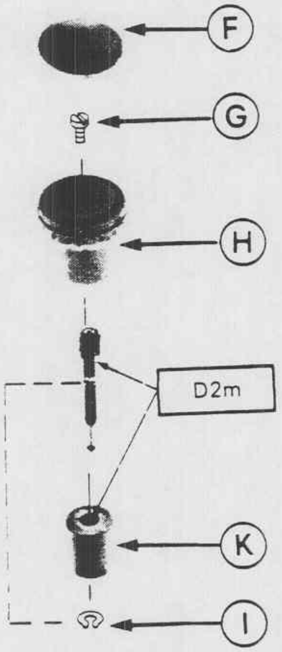
Remarque:

Serrer fermement les 4 vis Ⓒ et Ⓔ , et les assurer au Loctite 361 116.

Quitar el tornillo Ⓐ , el botón de sujeción Ⓑ , los 4 tornillos Ⓒ y el manguito Ⓓ .

Indicación:

Los 4 tornillos Ⓒ y Ⓔ deben ser apretados fuertemente y deben estar asegurados con Loctite 361 116.

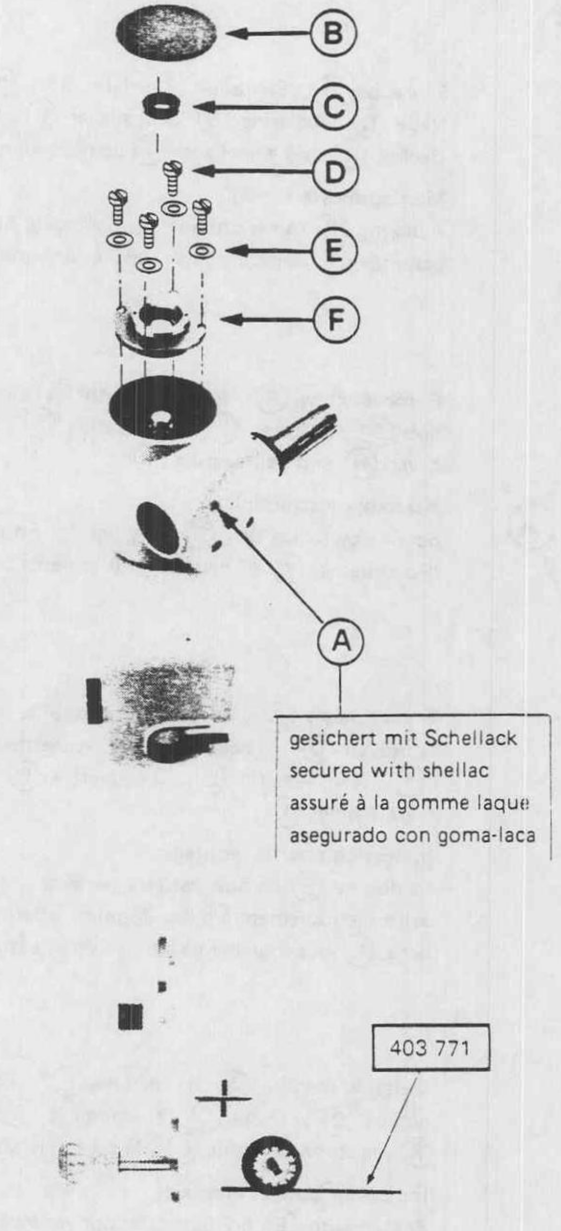


Deckel Ⓕ , Schraube Ⓖ , Knopf Ⓗ , Sicherungsring Ⓘ und Büchse Ⓚ demontieren.

Remove cover Ⓕ , screw Ⓖ , knob Ⓗ , locking ring Ⓘ and bush Ⓚ

Enlever le couvercle Ⓕ , la vis Ⓖ , le bouton Ⓗ , le circlip Ⓘ et la douille Ⓚ .

Quitar la tapa Ⓕ , el tornillo Ⓖ , el botón Ⓗ , el anillo de retención Ⓘ y el casquillo Ⓚ



gesichert mit Schellack
secured with shellac
assuré à la gomme laque
asegurado con goma-laca

Schraube Ⓐ lösen. Deckel Ⓑ, Gewindering Ⓒ, 4 Schrauben Ⓓ, U/Scheiben Ⓔ und Flansch Ⓕ demontieren.

Montagehinweis:

- Durch Verschieben des Flansches Ⓕ Schneckeneingriff einstellen.
  Auf 1 ganze Umdrehung kontrollieren.
- Mit Schraube Ⓐ Bremsmoment einstellen: 12-18 N cm.

Slacken screw Ⓐ. Remove cover Ⓑ, threaded ring Ⓒ, 4 screws Ⓓ, washers Ⓔ and flange Ⓕ

Assembly instruction:

Adjust meshing of worm gear by displacing flange Ⓕ and check for one complete turn

Adjust braking torque to 12 to 18 N cm by means of screw Ⓐ

Desserrer la vis Ⓐ. Enlever le couvercle Ⓑ, la bague filetée Ⓒ, les 4 vis Ⓓ, les rondelles Ⓔ et la bride Ⓕ

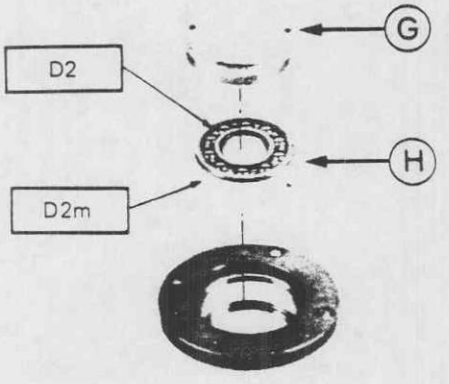
Indication pour le montage:

- Ajuster l'engrènement de la vis sans fin en déplacant la bride Ⓕ. Contrôler sur toute la circonférence.
- Au moyen de la vis Ⓐ, régler le moment de freinage à 12-18 N cm.

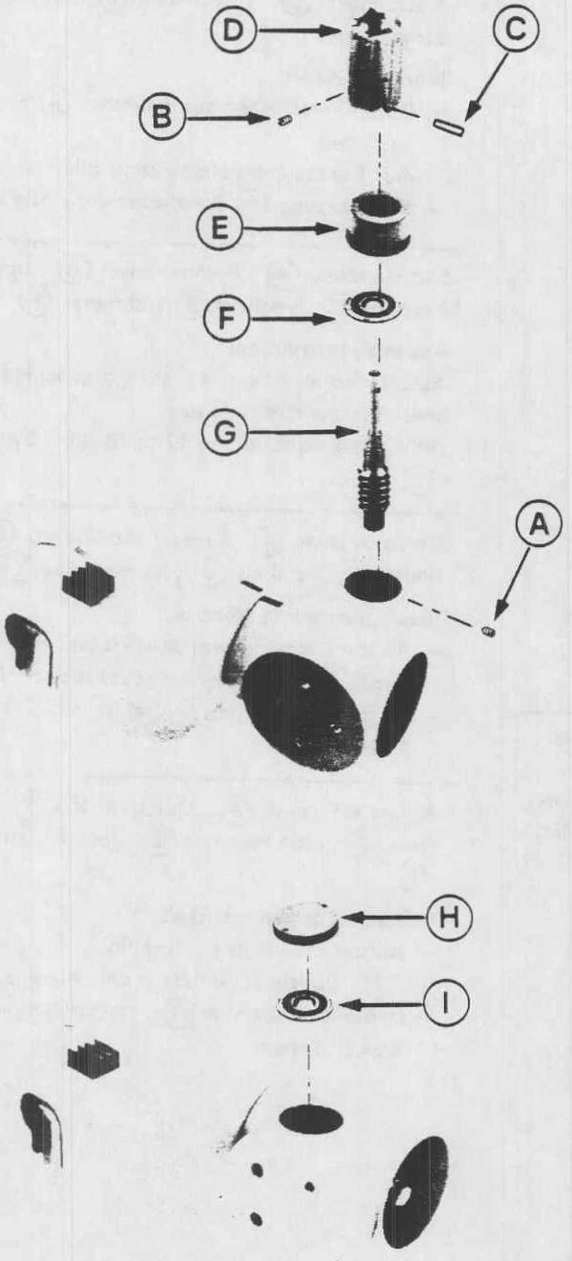
Aflojar el tornillo Ⓐ. Quitar la tapa Ⓑ, el anillo roscado Ⓒ, los 4 tornillos Ⓓ, las arandelas Ⓔ y la brida Ⓕ

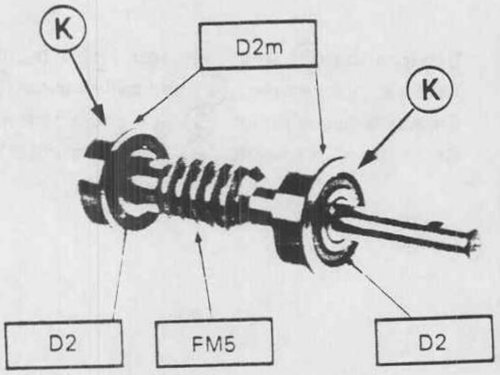
Indicación para el montaje:

- Ajustar el engrane del tornillo sin fin, desplazando la brida Ⓕ. Controlar en toda la circonferencia.
- Mediante el tornillo Ⓐ, regular el momento de freno en 12-18 N cm.



Gewindering Ⓖ und Kugellager Ⓗ demontieren.
Remove threaded ring Ⓖ and ball-bearing Ⓗ
Enlever la bague filetée Ⓖ et le roulement à billes Ⓗ
Quitar el anillo roscado Ⓖ y el rulemán Ⓗ





Schraube Ⓐ, Schraube Ⓑ, Kon. Stift Ⓒ, Nabe Ⓓ Achsring Ⓔ, Kugellager Ⓕ, Schnecke Ⓖ, Deckel Ⓗ und Kugellager Ⓘ demontieren.

Montagehinweis:

Achsring Ⓔ nur leicht anstellen. Äussere breite Schulter Ⓚ der Kugellager nach aussen montieren.

Remove screw Ⓐ, screw Ⓑ, conical pin Ⓒ, hub Ⓓ, axle ring Ⓔ, ball-bearing Ⓕ, worm Ⓖ, cover Ⓗ and ball-bearing Ⓘ

Assembly instruction:

Screw down axle ring Ⓔ only lightly. Fit outer broad flange Ⓚ of ball-bearings towards outside.

Enlever la vis Ⓐ, la vis Ⓑ, la goupille conique Ⓒ, le moyeu Ⓓ, la bague Ⓔ, le roulement à billes Ⓕ, la vis sans fin Ⓖ, le couvercle Ⓗ et le roulement à billes Ⓘ.

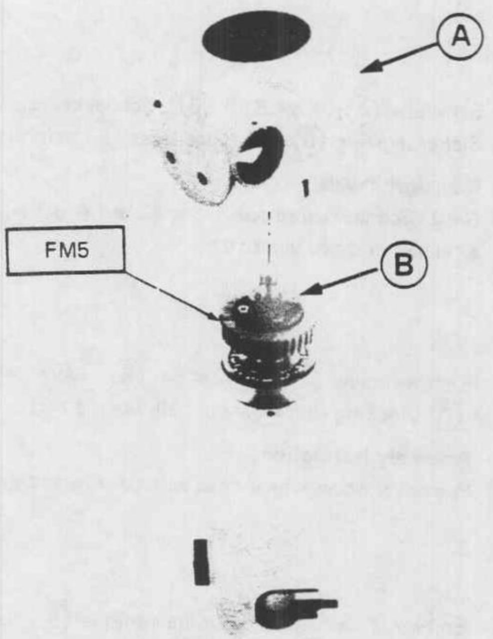
Indication pour le montage:

La douille Ⓔ ne doit pas être vissée trop fortement contre le roulement à billes. Monter l'épaulement large Ⓚ des roulements à billes vers l'extérieur.

Quitar el tornillo Ⓐ, el tornillo Ⓑ, la clavija cónica Ⓒ, el buje Ⓓ, el manguito Ⓔ, el rulemán Ⓕ, el tornillo sin fin Ⓖ, la tapa Ⓗ y el rulemán Ⓘ.

Indicación para el montaje:

El manguito Ⓔ no debe estar apoyado demasiado fuerte contra el rulemán. Montar el rulemán con el collar ancho Ⓚ hacia afuera.



Gehäuse Ⓐ nach oben von Kugellager abziehen.

Achtung:
4 Schrauben Ⓑ nicht lösen!

Pull housing Ⓐ upwards from ball-bearing

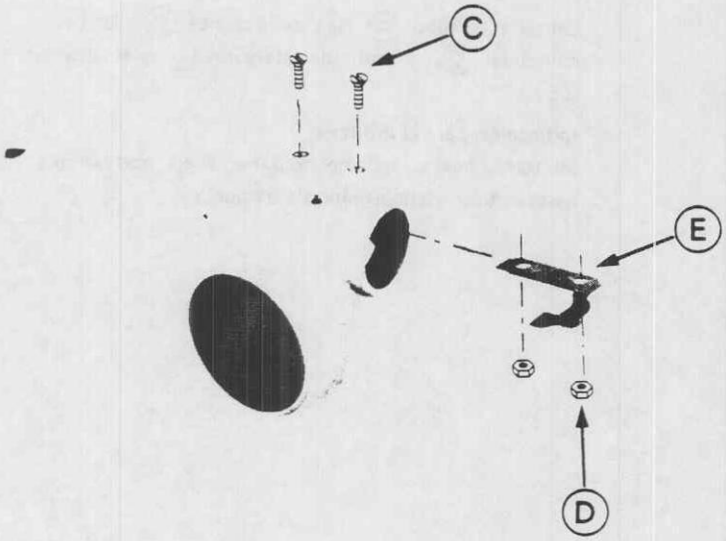
Note:
Do not slacken 4 screws Ⓑ !

Séparer le boîtier Ⓐ et le roulement à billes en le tirant vers le haut.

Attention:
Ne pas desserrer les 4 vis Ⓑ !

Separar la caja Ⓐ del rulemán, retirándola hacia arriba.

Atención:
No aflojar los 4 tornillos Ⓑ !

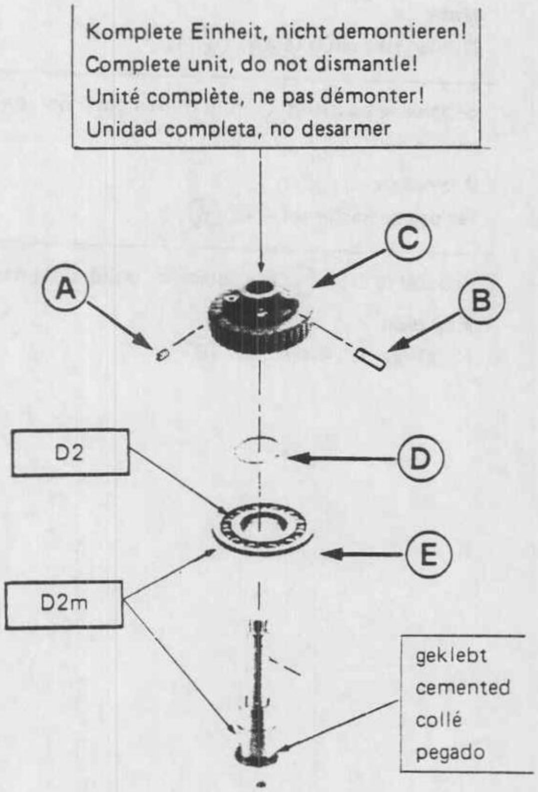


2 Schrauben Ⓒ, 2 Muttern Ⓓ und Bremse Ⓔ demontieren.

Remove 2 screws Ⓒ, 2 nuts Ⓓ and brake Ⓔ

Enlever les 2 vis Ⓒ, les 2 écrous Ⓓ et le frein Ⓔ.

Quitar los 2 tornillos Ⓒ, las 2 tuercas Ⓓ y el freno Ⓔ.



Komplete Einheit, nicht demontieren!
Complete unit, do not dismantle!
Unité complète, ne pas démonter!
Unidad completa, no desarmer

gek lebt
cemented
collé
pegado

Schraube Ⓐ, Kon. Stift Ⓑ, Schneckenrad Ⓒ, Sicherungsring Ⓓ und Kugellager Ⓔ demontieren.

Montagehinweis:

Neues Schneckenrad auf Achse bis auf Anschlag einschieben und neu verstiften.

Remove screw Ⓐ, conical pin Ⓑ, worm-wheel Ⓒ, locking ring Ⓓ and ball-bearing Ⓔ

Assembly instruction:

Push new worm-wheel onto axle to stop and pin afresh

Enlever la vis Ⓐ, la goupille conique Ⓑ, la roue hélicoïdale Ⓒ, le circlip Ⓓ et le roulement à billes Ⓔ.

Indication pour le montage:

Monter la nouvelle roue hélicoïdale sur l'axe en appuiant jusqu'à la butée et en la goupillant de nouveau.

Quitar el tornillo Ⓐ, la clavija cónica Ⓑ, la rueda helicoidal Ⓒ, el anillo de retención Ⓓ y el rulemán Ⓔ

Indicación para el montaje:

Montar la nueva rueda helicoidal en el eje, apoyándola hasta el tope y enclavijándola de nuevo.

WILD
HEERBRUGG

SERVICE MANUAL

MSV58, 59

MIKROSKOPTRÄGER
MICROSCOPE CARRIER
PORTE–MICROSCOPE
PORTAMICROSCOPIO

Ausgabe 12/80
702-Ws/hmo

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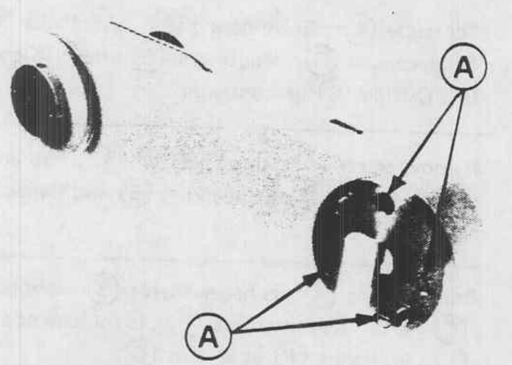
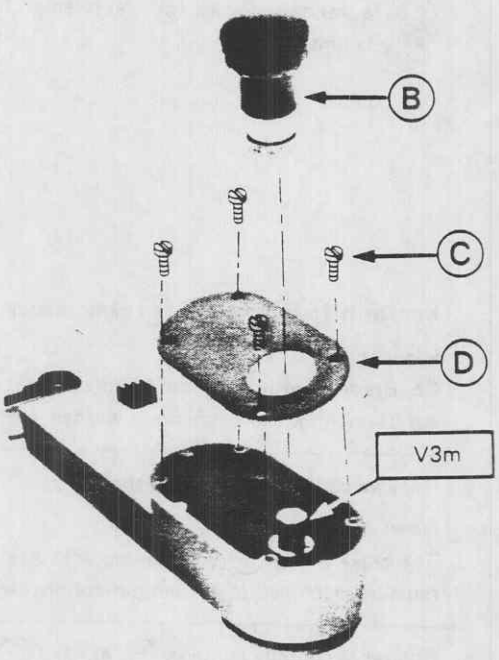


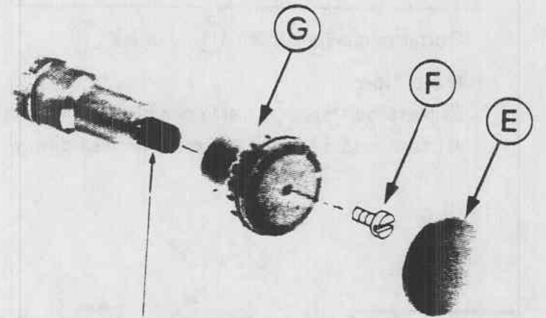


Die 4 Schrauben Ⓐ müssen fest angezogen und mit Loctite 361 116 gesichert sein.
Bremsknopf Ⓑ , 4 Schrauben Ⓒ und Deckel Ⓓ demontieren.

The 4 screws Ⓐ must be well tightened and secured with Loctite 361 116.
Remove brake knob Ⓑ , 4 screws Ⓒ and cover Ⓓ

Serrer fermement les 4 vis Ⓐ et les assurer au Loctite 361 116.
Enlever le bouton de freinage Ⓑ , les 4 vis Ⓒ et le couvercle Ⓓ .

Apretar fuertemente los 4 tornillos Ⓐ y asegurarlos con Loctite 361 116.
Quitar el botón de freno Ⓑ , los 4 tornillos Ⓒ y la tapa Ⓓ .



geklebt mit Araldit
cemented with Araldit
collé à l'Araldit
pegado con Araldit

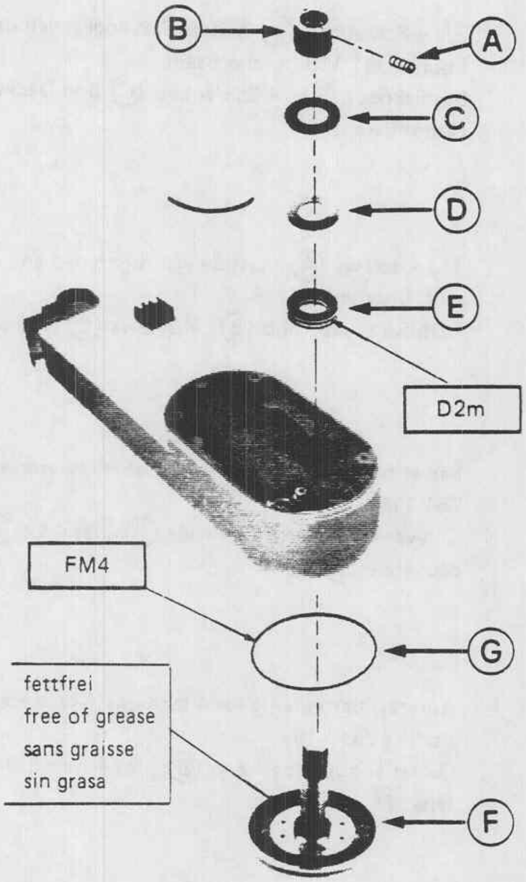
Deckel Ⓔ , Schraube Ⓕ und Knopf Ⓖ demontieren.

Remove cover Ⓔ , screw Ⓕ and knob Ⓖ

Enlever le couvercle Ⓔ , la vis Ⓕ et le bouton Ⓖ

Quitar la tapa Ⓔ , el tornillo Ⓕ y el botón Ⓖ

2

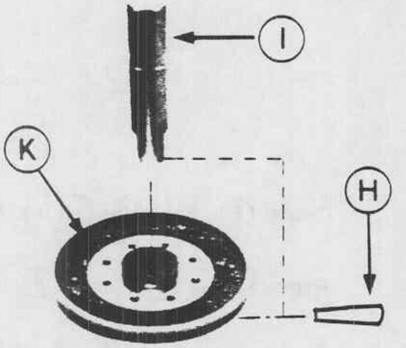


Schraube Ⓐ, Gewindering Ⓑ, U/Scheibe Ⓒ, Federscheibe Ⓓ, Kugellager Ⓔ und Flansch Ⓕ und O-Ring Ⓖ demontieren.

Remove screw Ⓐ, threaded ring Ⓑ, washer Ⓒ, spring washer Ⓓ, ball-bearing Ⓔ and flange Ⓕ with ring Ⓖ.

Enlever la vis Ⓐ, la bague filetée Ⓑ, la rondelle Ⓒ, la rondelle élastique Ⓓ, le roulement à billes Ⓔ, le flasque Ⓕ et le joint Ⓖ.

Quitar el tornillo Ⓐ, el anillo roscado Ⓑ, la arandela Ⓒ, la arandela elástica Ⓓ, el rulemán Ⓔ, la brida Ⓕ y la junta Ⓖ.



Kon. Stift Ⓗ und Achse Ⓘ demontieren.

Hinweis:

Der Bremsbelag Ⓚ ist mit Araldit geklebt und muss auf das richtige Mass abgedreht werden. Siehe Zeichnung.

Remove conical pin Ⓗ and shaft Ⓘ

Note:

The brake lining Ⓚ is cemented with Araldite and must be machined to correct dimensions (see drawing)

Enlever la goupille conique Ⓗ et l'axe Ⓘ

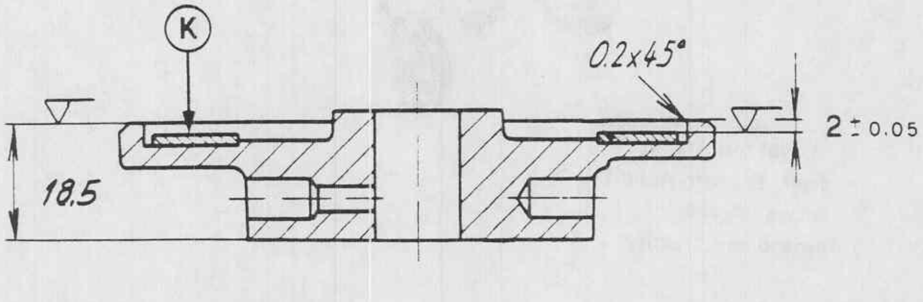
Remarque:

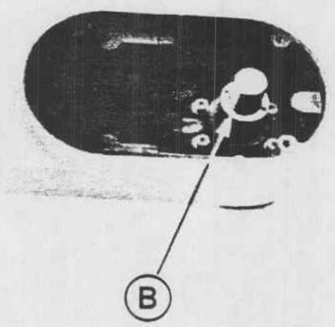
La garniture de frein Ⓚ est collée à l'Araldit. Elle doit être retouchée au tour pour atteindre la mesure correcte. Voir dessin.

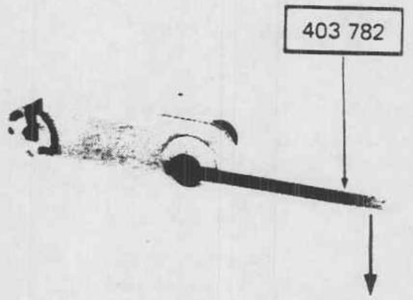
Quitar la clavija cónica Ⓗ y el eje Ⓘ.

Indicación:

El forro de freno Ⓚ está pegado con Araldit y debe ser torneado a la medida correcta. Vea dibujo.







Montagehinweis:

Mit Gewindering Ⓑ Bremsmoment einstellen.
Bremse gelöst minimum : 150 Ncm (1kg bei 15cm Hebelarm)
Bremse gelöst maximum : 250 Ncm (1kg bei 25cm Hebelarm)
Bremse angezogen minimum : 2000 Ncm (10kg bei 20cm Hebelarm)

Assembly instruction:

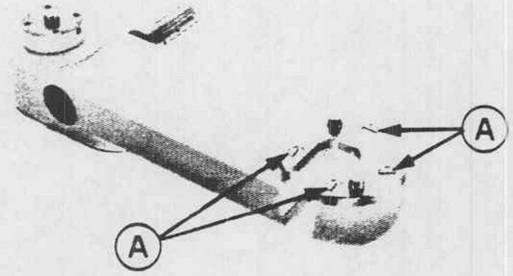
Adjust braking torque, by turning threaded ring Ⓑ.
Brake released minimum : 150 Ncm (1kg at 15cm lever arm)
Brake released maximum : 250 Ncm (1kg at 25cm lever arm)
Brake tightend up minimum : 2000 Ncm (10kg at 20cm lever arm)

Indication pour le montage:

Régler le moment de torsion au moyen de la bague filetée Ⓑ.
Frein libéré min. : 150 Ncm (1kg pour un bras de levier de 15cm)
Frein libéré max. : 250 Ncm (1kg pour un bras de levier de 25cm)
Frein serré min. : 2000 Ncm (10kg pour un bras de levier de 20cm)

Indicación para el montaje:

Ajustar el momento de torsión mediante el anillo roscado Ⓑ.
Freno soltado min. : 150 Ncm (1kg para un brazo de palanca de 15cm)
Freno soltado max. : 250 Ncm (1kg para un brazo de palanca de 25cm)
Freno apretado min. : 2000 Ncm (1kg para un brazo de palanca de 20cm)



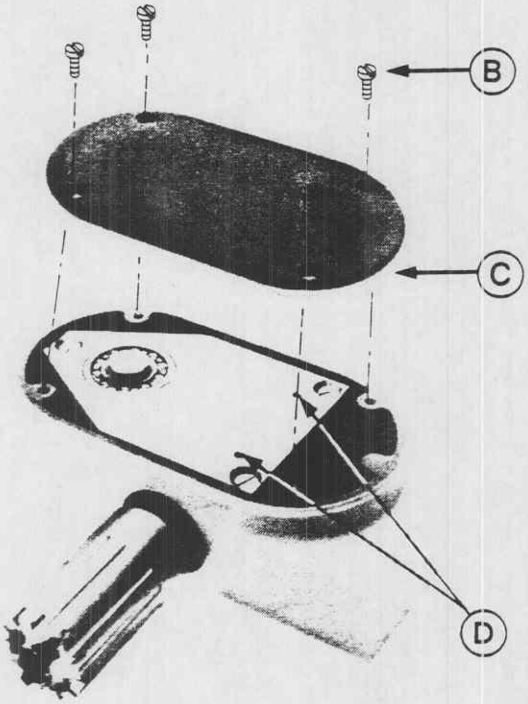
Hinweis:

Die 4 Schrauben Ⓐ müssen fest angezogen und mit Loctite 361 116 gesichert sein.

4 Schrauben Ⓑ und Deckel Ⓒ demontieren.

Montagehinweis:

Durch gleichmässiges Anziehen der 2 Schrauben Ⓓ Bremsmoment einstellen: 15-25 N cm.



Note:

Thoroughly tighten 4 screws Ⓐ and secure with Loctite 361 116

Remove 4 screws Ⓑ and cover Ⓒ .

Assembly instruction:

Adjust braking torque to 15-25 N cm by evenly tightening 2 screws Ⓓ.

Indication:

Serrer fortement les 4 vis Ⓐ et les assurer au Loctite 361 116.

Enlever les 4 vis Ⓑ et le couvercle Ⓒ .

Indication pour le montage:

Régler le moment de freinage à 15-25 N cm en serrant les 2 vis Ⓓ de manière égale.

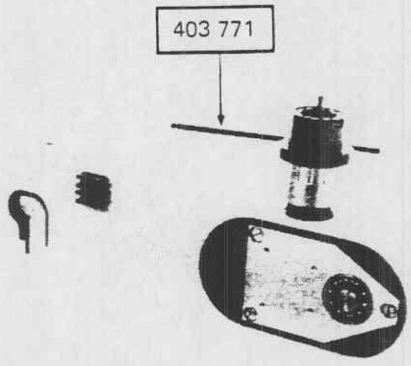
Indicación:

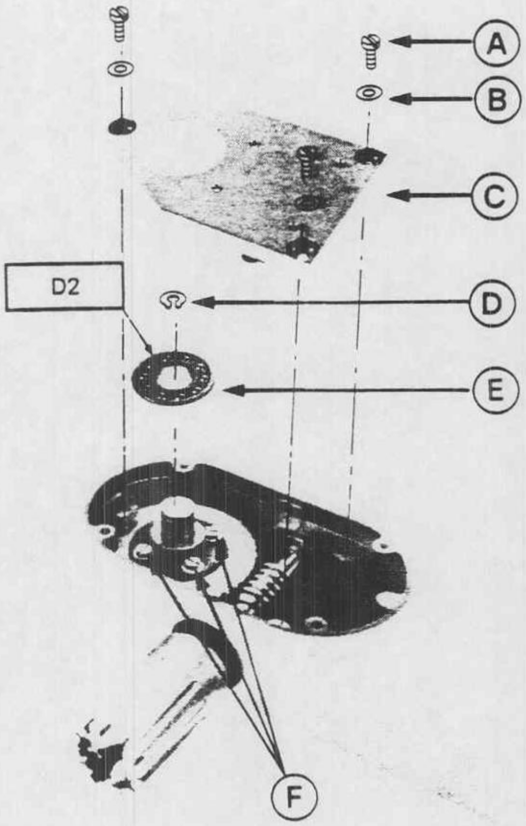
Los 4 tornillos Ⓐ deben estar apretados fuertemente y ser asegurados con Loctite 361 116.

Quitar los 4 tornillos Ⓑ y la tapa Ⓒ

Indicación para el montaje:

Regular el momento de frenado en 15-25 N cm, apretando los 2 tornillos Ⓓ de forma igual.





3 Schrauben Ⓐ, U/Scheiben Ⓑ, Flansch Ⓒ, Sicherungsring Ⓓ und Kugellager Ⓔ demontieren.

Montagehinweis:

Durch Verschieben von Flansch Ⓒ Schneckeneingriff spielfrei einstellen. Kontrolle auf einer ganzen Umdrehung.

Achtung:

4 Schrauben Ⓕ nicht lösen.

Remove 3 screws Ⓐ, washers Ⓑ, flange Ⓒ, locking ring Ⓓ and ball-bearing Ⓔ

Assembly instruction:

Worm must engage without backlash: adjust by displacing flange Ⓒ; check that there is no backlash over a complete turn

Note:

Do not slacken 4 screws Ⓕ

Enlever les 3 vis Ⓐ, les rondelles Ⓑ, la bride Ⓒ, le circlip Ⓓ et le roulement à billes Ⓔ

Indication pour le montage:

Eliminer le jeu d'engrènement de la vis sans fin en déplaçant la bride Ⓒ. Contrôler sur toute la circonférence.

Attention:

Ne pas desserrer les 4 vis Ⓕ

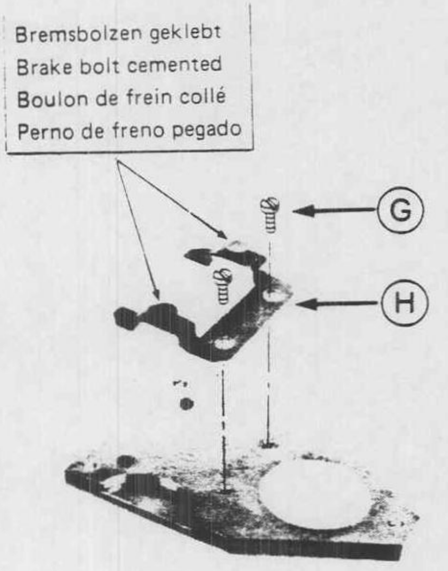
Quitar los 3 tornillos Ⓐ, la arandela Ⓑ, la brida Ⓒ, el anillo de seguridad Ⓓ y el rulemán Ⓔ.

Indicación para el montaje:

Eliminar el juego de engrane del tornillo sin fin, desplazando la brida Ⓒ. Controlar en toda la circunferencia.

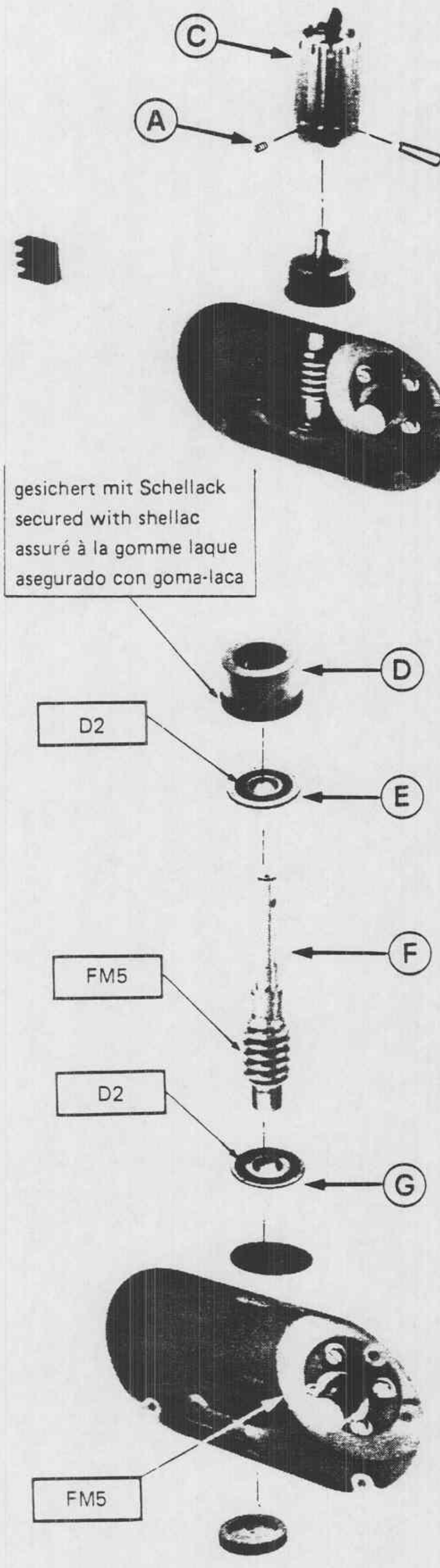
Atención:

No aflojar los 4 tornillos Ⓕ.



Bremsbolzen geklebt
Brake bolt cemented
Boulon de frein collé
Perno de freno pegado

2 Schrauben Ⓖ und Bremsfeder Ⓗ demontieren.
Remove 2 screws Ⓖ and brake spring Ⓗ
Enlever les 2 vis Ⓖ et le ressort du frein Ⓗ.
Quitar los 2 tornillos Ⓖ y el resorte de freno Ⓗ


Ⓒ
Ⓑ
Ⓐ
gesichert mit Schellack
secured with shellac
assuré à la gomme laque
asegurado con goma-laca
Ⓓ
D2
Ⓔ
Ⓕ
FM5
D2
Ⓖ
FM5

Schraube Ⓐ , Kon. Stift Ⓑ und Nabe Ⓒ demontieren. Achsring Ⓓ , Kugellager Ⓔ , Schnecke Ⓕ , Kugellager Ⓖ demontieren.

Montagehinweis:

Achsring Ⓓ nur leicht anziehen. Äussere breite Schulter Ⓗ der Kugellager nach aussen montieren.

Remove screw Ⓐ , conical pin Ⓑ and hub Ⓒ . Remove axle ring Ⓓ , ball-bearing Ⓔ , worm Ⓕ and ball-bearing Ⓖ

Assembly instruction:

Axle ring Ⓓ must be tightened only slightly. Wide rims Ⓗ of ball-bearings must face out

Enlever la vis Ⓐ , la goupille conique Ⓑ et le moyen Ⓒ Enlever la bague Ⓓ , le roulement à billes Ⓔ , la vis sans fin Ⓕ et le roulement à billes Ⓖ .

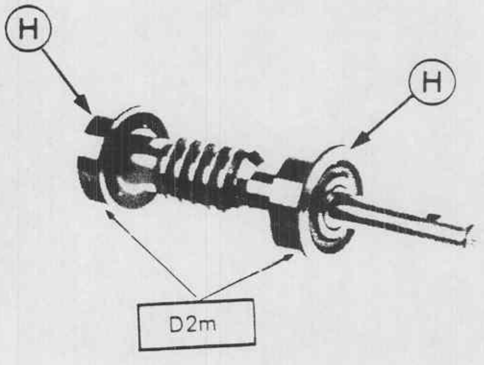
Indication pour le montage:

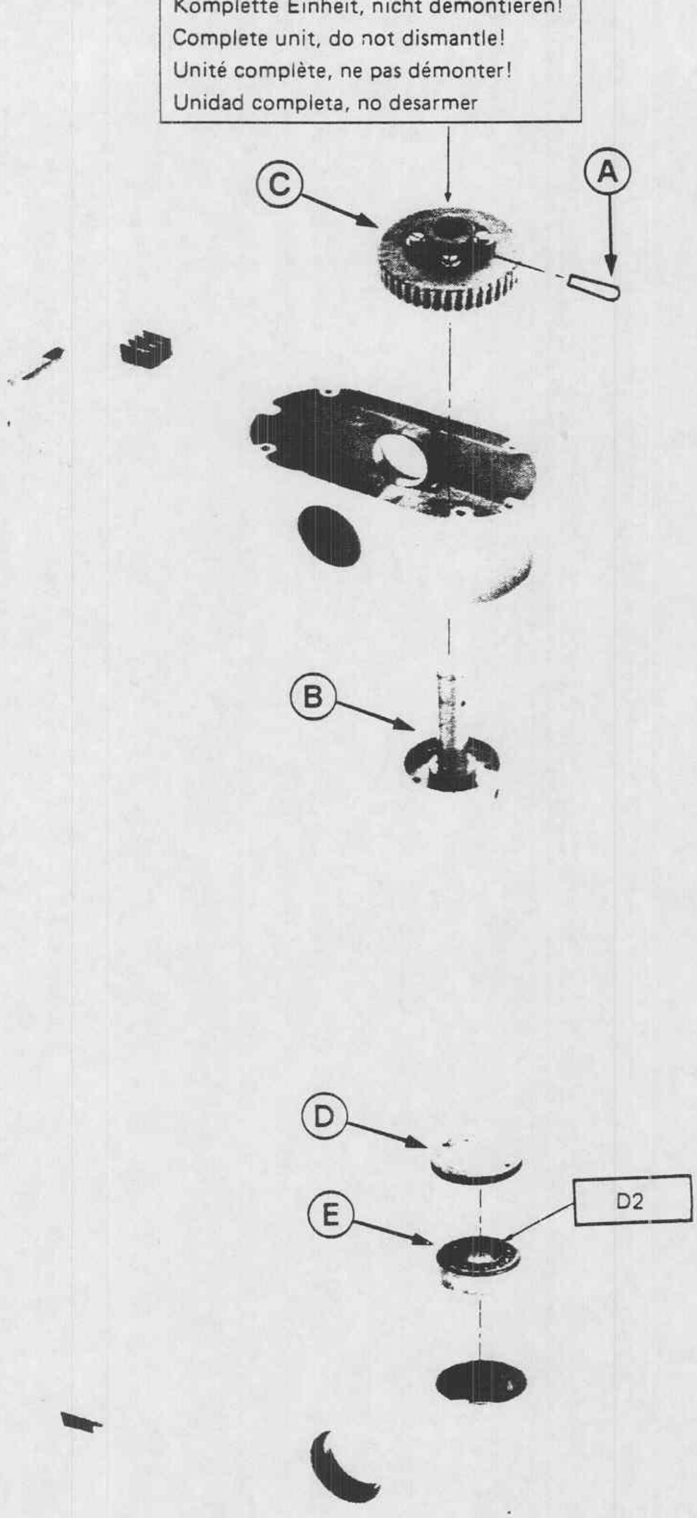
Ne pas trop serrer la bague Ⓓ . Monter le roulement à billes, l'épaulement large vers l'extérieur.

Quitar el tornillo Ⓐ , el perno cónico Ⓑ y el buje Ⓒ . Quitar el anillo Ⓓ , el rulemán Ⓔ , el tornillo sin fin Ⓕ y el rulemán Ⓖ .

Indicación para el montaje:

No apretar demasiado el anillo Ⓓ . Montar el rulemán con la parte ancha Ⓗ hacia afuera.





Komplette Einheit, nicht demontieren!
Complete unit, do not dismantle!
Unité complète, ne pas démonter!
Unidad completa, no desarmer

Kon. Stift Ⓐ , Achse Ⓑ , Schneckenrad Ⓒ , Gewindering Ⓓ und Kugellager Ⓔ demontieren.

Remove conical pin Ⓐ , axle Ⓑ , wormwheel Ⓒ , ring nut Ⓓ and ball-bearing Ⓔ

Enlever la goupille conique Ⓐ , l'axe Ⓑ , la roue hélicoïdale Ⓒ , la bague filetée Ⓓ et le roulement à billes.

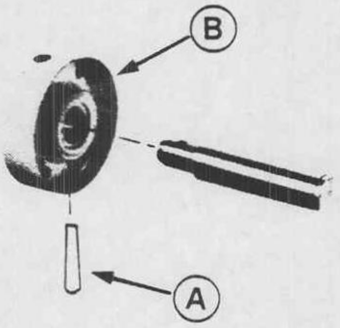
Quitar el perno cónico Ⓐ el eje Ⓑ , la rueda helicoidal Ⓒ el anillo roscado Ⓓ y el rulemán Ⓔ .

Kon. Stift Ⓐ und Anschlussflansch Ⓑ demontieren.

Montagehinweis:

Neuer Anschlussflansch auf Achse bis Anschlag einschieben und verstiften.

Neues Schneckenrad mit Kugellager Ⓒ auf Achse bis Anschlag einschieben und verstiften.



Remove conical pin Ⓐ and connecting flange Ⓑ

Assembly instruction:

Push new connecting flange onto axle to stop and pin into position

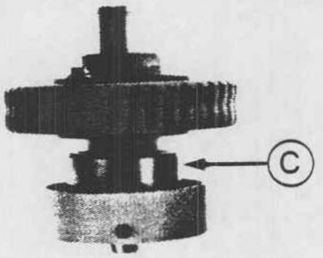
Push new wormwheel with ball-bearing Ⓒ onto axle to stop and pin into position.

Enlever la goupille conique Ⓐ et la bride de raccordement Ⓑ .

Indication pour le montage:

Glisser la nouvelle bride de raccordement sur l'axe jusqu'à la butée et la goupiller.

Glisser la nouvelle roue hélicoïdale et le roulement à billes Ⓒ sur l'axe jusqu'à la butée et la goupiller.



Quitar el perno cónico Ⓐ y la brida de unión Ⓑ .

Indicación para el montaje:

Empujar la nueva brida de unión en el eje hasta el tope y enclavijarla.

Empujar la nueva rueda helicoidal y el rulemán Ⓒ en el eje hasta el tope y enclavijarla.

WILD
HEERBRUGG

SERVICE MANUAL

MTU78,79,94,95

BINOKULARTUBEN
BINOCULAR TUBES
TUBES BINOCULAIRES
TUBOS BINOCULARES

Ausgabe 12/80
702-Ws/hmo

INHALTSVERZEICHNIS
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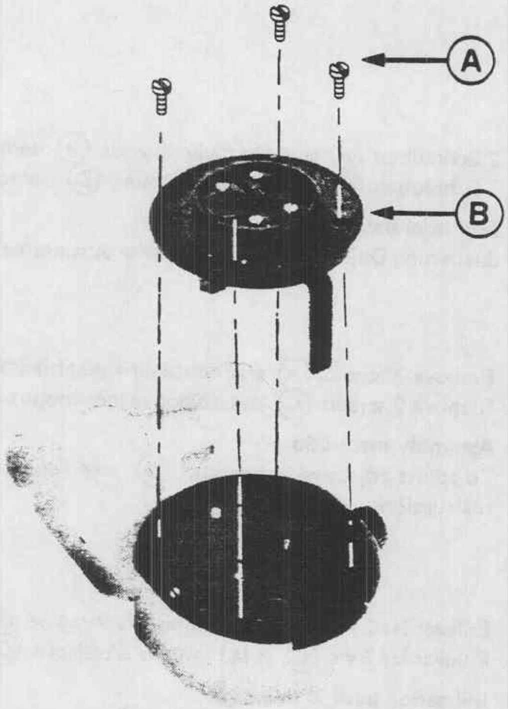
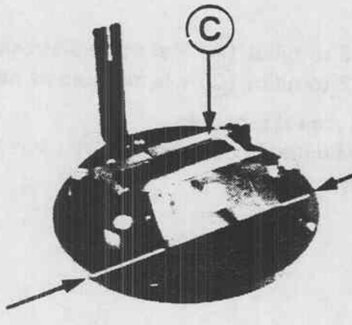


4 Schrauben Ⓐ und Ringschwalbe Ⓑ demontieren.

Remove 4 screws Ⓐ and dovetail ring Ⓑ .

Enlever les 4 vis Ⓐ et la queue d'aronde annulaire Ⓑ .

Quitar los 4 tornillos Ⓐ y la cola de milano anular Ⓑ



Achtung:
Vor dem Demontieren der Prismafassung Ⓒ Position mit Reissnadel markieren.
4 Schrauben Ⓓ , Prismafassung Ⓒ , 2 Schrauben Ⓔ und Blendenhebel Ⓕ demontieren.

Montagehinweis:
Prismafassung Ⓒ genau auf Markierung montieren. Justierung siehe Justieranleitung.

Note:
Before dismantling, use scribing needle to mark position of prism mount Ⓒ .
Remove 4 screws Ⓓ , prism mount Ⓒ , 2 screws Ⓔ and diaphragm lever Ⓕ

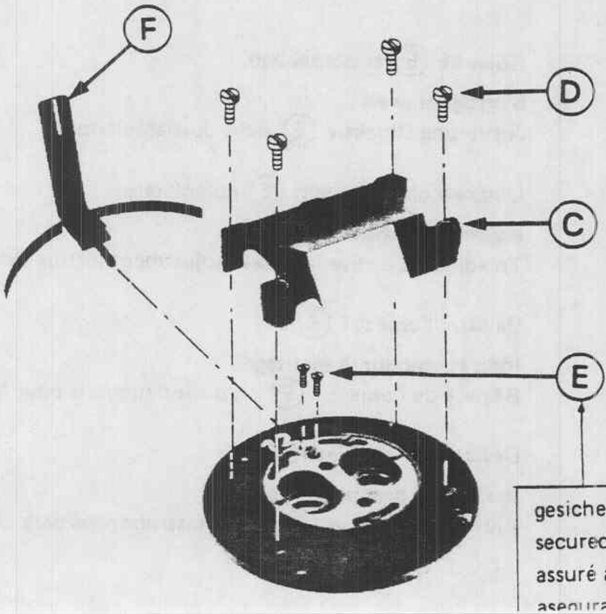
Assembly instruction:
Position prism mount Ⓒ precisely on line marked with scribing needle. To adjust, see Adjustment Instructions.

Attention:
Avant le démontage de la monture de prisme Ⓒ , marquer sa position au moyen d'une pointe à tracer.
Enlever les 4 vis Ⓓ , la monture de prisme Ⓒ , les 2 vis Ⓔ et le levier du diaphragme Ⓕ .

Indication pour le montage:
Monter la monture de prisme Ⓒ exactement sur les marques
Réglage: Voir instructions pour le réglage

Atención:
Antes de quitar la montura de prisma Ⓒ , marcar su posición mediante una punta de trazar.
Quitar los 4 tornillos Ⓓ , la montura de prisma Ⓒ , los 2 tornillos Ⓔ y la palanca de diafragma Ⓕ .

Indicación para el montaje:
Montar la montura de prisma Ⓒ exactamente en las marcas.
Ajuste: Vea instrucciones para el ajuste.



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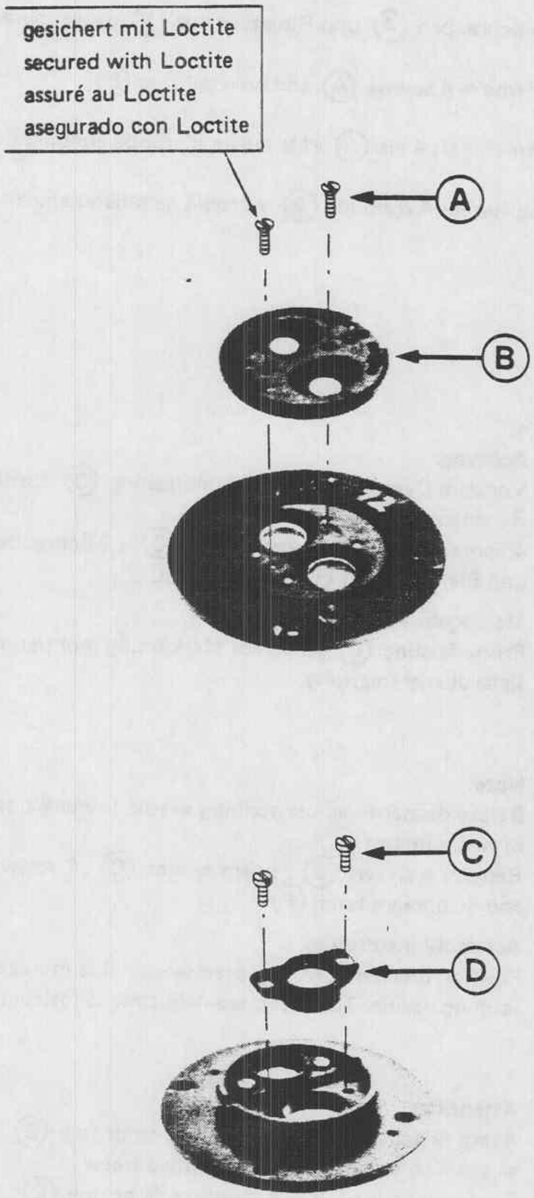
assuré au Loctite
asegurado con Loctite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assuré au Loctite
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A
B
C
D

2 Schrauben Ⓐ und Doppelirisblende Ⓑ demontieren.
2 Schrauben Ⓒ und Objektivfassung Ⓓ demontieren.

Montagehinweis:
Justierung Objektivfassung Ⓓ siehe Justieranleitung.

Remove 2 screws Ⓐ and double-iris diaphragm Ⓑ
Remove 2 screws Ⓒ and objective-lens mount Ⓓ

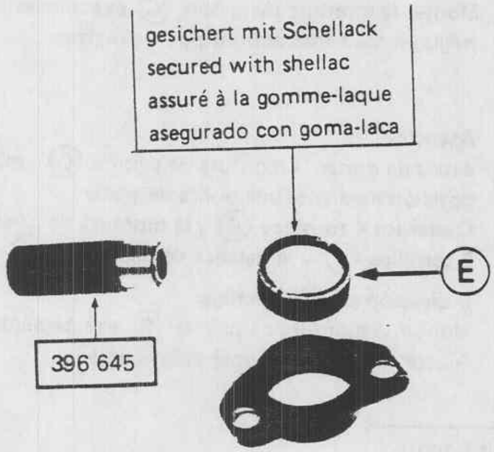
Assembly instruction:
To adjust objective-lens mount Ⓓ , see Adjustment Instructions.

Enlever les 2 vis Ⓐ et le double diaphragme iris Ⓑ
Enlever les 2 vis Ⓒ et la monture d'objectif Ⓓ

Indication pour le montage:
Réglage de la monture d'objectif Ⓓ : Voir instructions pour le réglage.

Quitar los 2 tornillos Ⓐ y el doble diafragma iris Ⓑ .
Quitar los 2 tornillos Ⓒ y la montura de objetivo Ⓓ .

Indicación para el montaje:
Ajuste de la montura de objetivo Ⓓ : Vea instrucciones para el ajuste.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assuré à la gomme-laque
asegurado con goma-laca
E
396 645

Objektiv Ⓔ ausschrauben.

Montagehinweis:
Justierung Objektiv Ⓔ siehe Justieranleitung.

Unscrew objective lens Ⓔ completely.

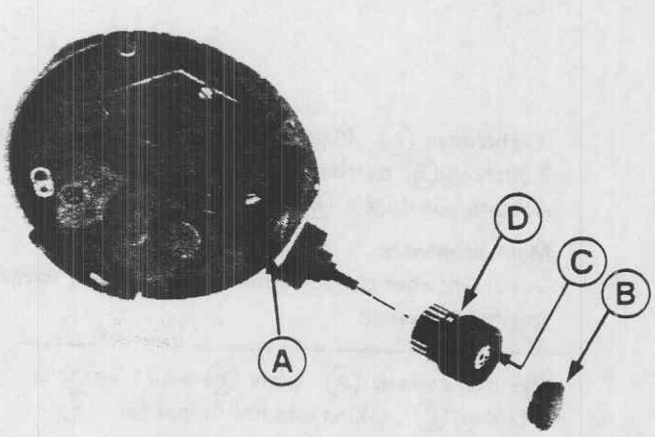
Assembly instruction:
To adjust objective lens, see Adjustment Instructions

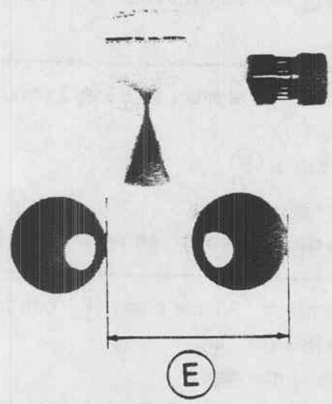
Dévisser l'objectif Ⓔ .

Indication pour le montage:
Réglage de l'objectif Ⓔ : Voir instructions pour le réglage.

Destornillar el objetivo Ⓔ .

Indicación para el montaje:
Ajuste del objetivo Ⓔ : Vea instrucciones para el ajuste.





Schraube Ⓐ lösen. Deckel Ⓑ demontieren. Mutter Ⓒ lösen und Knopf Ⓓ demontieren.

Montagehinweis:
An Okularrohren Augenabstand Ⓔ messen und Skala auf gleiche Ablesung einstellen. Mit Schraube Ⓐ Gang regulieren. (Nicht möglich in der 1. Serie)

Slacken screw Ⓐ . Remove cover Ⓑ . Slacken nut Ⓒ and remove knob Ⓓ

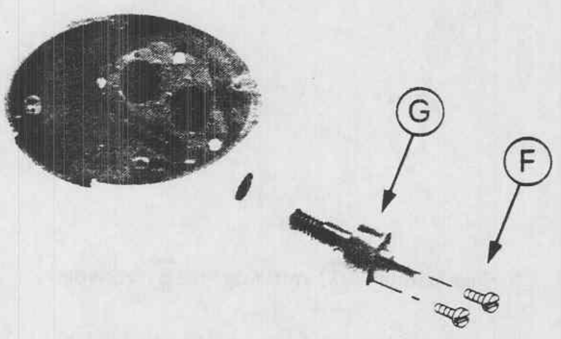
Assembly instruction:
Measure eye base Ⓔ on eyepiece tubes and set scale to same reading. Regulate ease of movement by means of screw Ⓐ (not possible with instruments of first series)

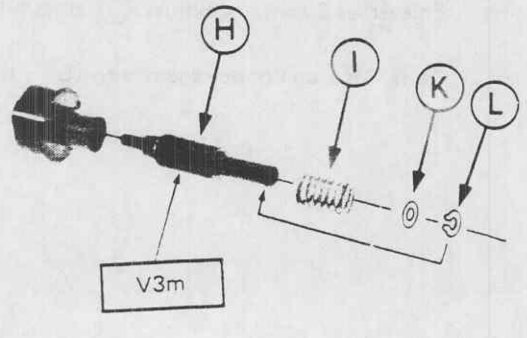
Desserrer la vis Ⓐ . Enlever le couvercle Ⓑ . Desserrer l'écrou Ⓒ et enlever le bouton Ⓓ .

Indication pour le montage:
Mesurer la distance interpupillaire des tubes porte-oculaires Ⓔ et régler la même valeur sur l'échelle. Régler la dureté du mouvement au moyen de la vis Ⓐ .
(Impossible dans les instruments de la 1 ère série)

Aflojar el tornillo Ⓐ . Quitar la tapa Ⓑ . Aflojar la tuerca Ⓒ y quitar el botón Ⓓ .

Indicación para el montaje:
Medir la distancia interpupilar Ⓔ en los tubos porta-oculares y regular la escala en el valor correspondiente. Regular la dureza de la marcha mediante el tornillo Ⓐ .
(En los instrumentos de la 1. serie no es posible).





2 Schrauben Ⓕ und Trieb Ⓖ demontieren.
Spindel Ⓗ mit Feder Ⓘ , U/Scheibe Ⓚ und Sicherungsring Ⓛ ausschrauben.

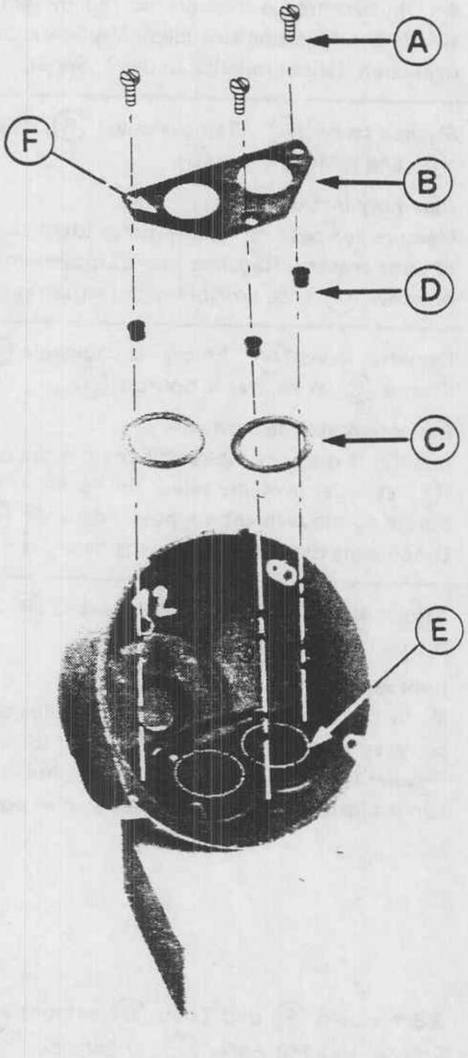
Remove 2 screws Ⓕ and drive Ⓖ .
Unscrew spindle Ⓗ with spring Ⓘ , washer Ⓚ and locking ring Ⓛ .

Enlever les 2 vis Ⓕ et la vis d'écartement Ⓖ .
Dévisser l'arbre fileté Ⓗ et le ressort Ⓘ , la rondelle Ⓚ et le circlip Ⓛ .

Quitar los 2 tornillos Ⓕ y el tornillo de regulación Ⓖ .
Destornillar el husillo Ⓗ y el resorte Ⓘ , la arandela Ⓚ y el anillo de seguridad Ⓛ .

TUBEN MIT TRIEB
TUBES WITH DRIVE

TUBES AVEC VIS D'ECARTEMENT
TUBOS CON TORNILLO DE REGULACION



3 Schrauben Ⓐ, Platte Ⓑ mit 2 Scheiben Ⓒ und 3 Büchsen Ⓓ demontieren.

Achtung auf Kugeln Ⓔ.

Montagehinweis:

Durch Anziehen der Schrauben Ⓕ wird die Bewegung spielfrei eingestellt.

Remove 3 screws Ⓐ, plate Ⓑ with 2 washers Ⓒ and 3 bushes Ⓓ, taking **care** not to lose balls Ⓔ

Assembly instruction:

Tighten screws Ⓕ to adjust eyepiece movement without backlash.

Enlever les 3 vis Ⓐ, la plaque Ⓑ et 2 rondelles Ⓒ. et les 3 douilles Ⓓ.

Attention aux billes Ⓔ.

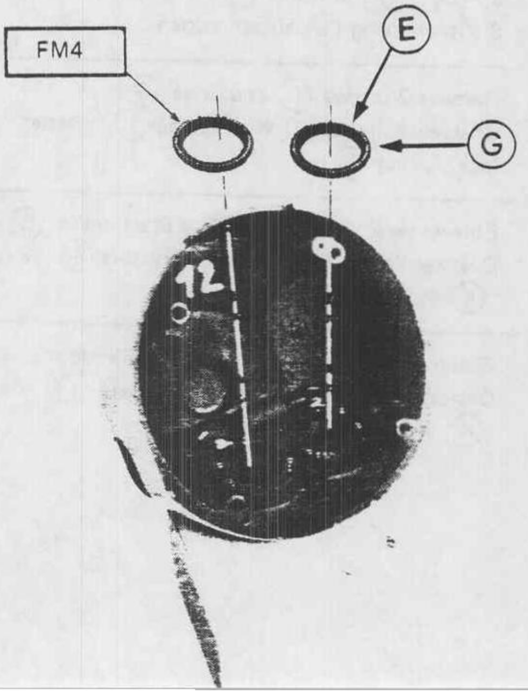
Indication pour le montage:

Eliminer le jeu du mouvement en serrant les vis Ⓕ.

Quitar los 3 tornillos Ⓐ, la placa Ⓑ con las 2 arandelas Ⓒ y los 3 casquillos Ⓓ.

Indicación para el montaje:

Eliminar el juego del movimiento apretando los tornillos Ⓕ.

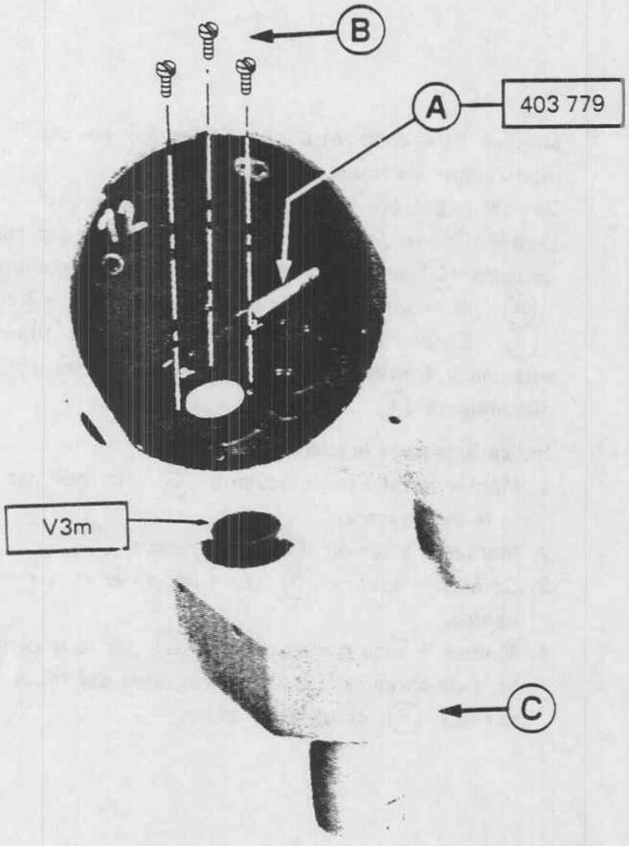


2 Kugelbahnen Ⓖ mit Kugeln Ⓔ abheben.

Lift off 2 ball races Ⓖ including balls Ⓔ

Enlever les 2 anneaux à billes Ⓖ et les billes Ⓔ

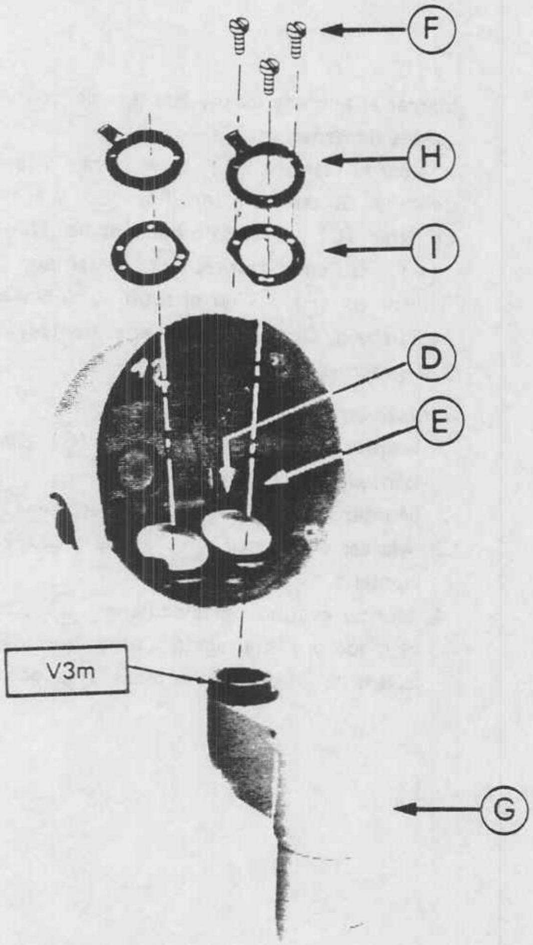
Quitar los 2 anillos de rodamiento Ⓖ y las bolillas Ⓔ



Zahnradeingriff markieren. Linkes und rechtes Stirnrad darf nicht verwechselt werden.
Dorn Ⓐ zwischen Gehäuse und Stirnrad klemmen.
3 Schrauben Ⓑ demontieren, Okularrohr Ⓒ nach unten ziehen. Dorn Ⓐ entfernen. Feder Ⓓ, Federpuffer Ⓔ, 3 Schrauben Ⓕ demontieren, Okularrohr Ⓖ nach unten ziehen. 2 Stirnräder Ⓗ und 2 Blenden Ⓘ demontieren.

Montagehinweis:

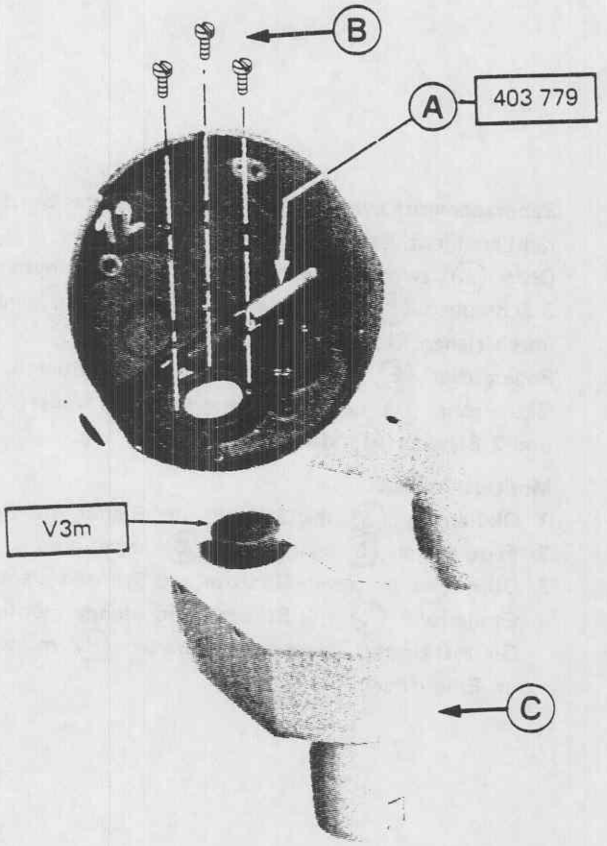
1. Okularrohr Ⓖ mit Stirnrad und Blende montieren.
2. Federpuffer Ⓔ und Feder Ⓓ montieren.
3. Dorn Ⓐ zwischen Gehäuse und Stirnrad klemmen.
4. Okularrohr Ⓒ mit Stirnrad und Blende montieren. Die markierten Zähne der Stirnräder Ⓗ müssen im Eingriff sein.



Mark meshing of gears; do not interchange left and right spur gearwheel.
Clamp mandrel Ⓐ between housing and spur gearwheel
Remove 3 screws Ⓑ, pull eyepiece tube Ⓒ downward. Remove mandrel Ⓐ. Remove spring Ⓓ, spring buffer Ⓔ, 3 screws Ⓕ, pull eyepiece tube Ⓖ downward. Remove 2 spur gearwheels Ⓗ and 2 masks Ⓘ

Assembly instruction:

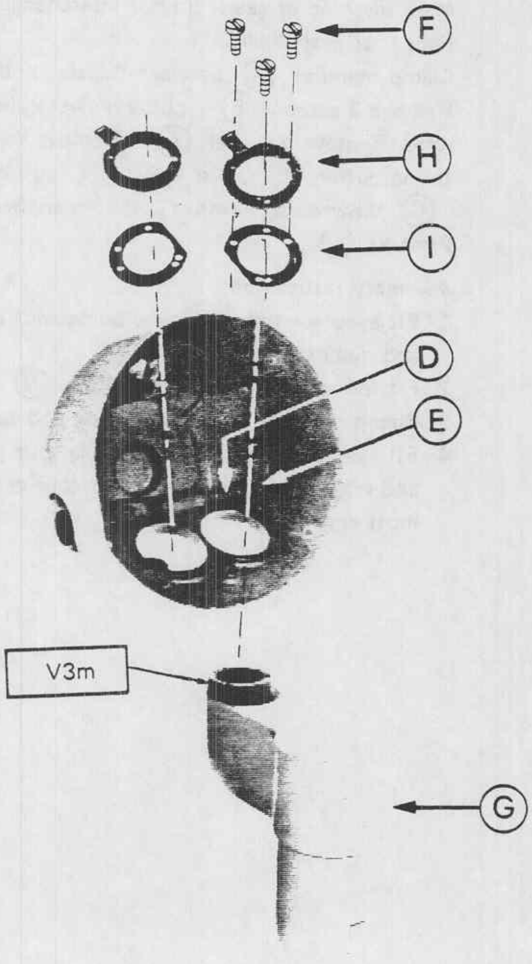
1 Fit eyepiece tube Ⓖ including spur gearwheels and diaphragm
2 Fit spring buffer Ⓔ and spring Ⓓ
3 Clamp mandrel between housing and spur gearwheel
4 Fit eyepiece tube Ⓒ including spur gearwheel and mask; the teeth marked of spur gearwheels Ⓗ must engage



Marquer l'engrènement des roues dentées. Ne pas interchanger les roues gauche et droite.
Coincer le goujon Ⓐ entre le boîtier et la roue dentée. Enlever les 3 vis Ⓑ , enlever le tube porte-oculaire Ⓒ en tirant vers enbas. Enlever le goujon Ⓐ , le ressort Ⓓ , le poussoir Ⓔ et les 3 vis Ⓕ . Enlever le tube porte-oculaire Ⓖ en tirant vers enbas. Enlever les 3 roues dentées Ⓗ et les 2 diaphragmes Ⓘ .

Indications pour le montage:

1. Monter le tube porte-oculaire Ⓖ , la roue dentée et le diaphragme.
2. Monter le poussoir Ⓔ et le ressort Ⓓ .
3. Coincer le goujon Ⓐ entre le boîtier et la roue dentée.
4. Monter le tube porte-oculaire Ⓒ , la roue dentée et le diaphragme. Les dents marquées des roues dentées Ⓗ doivent coïncider.



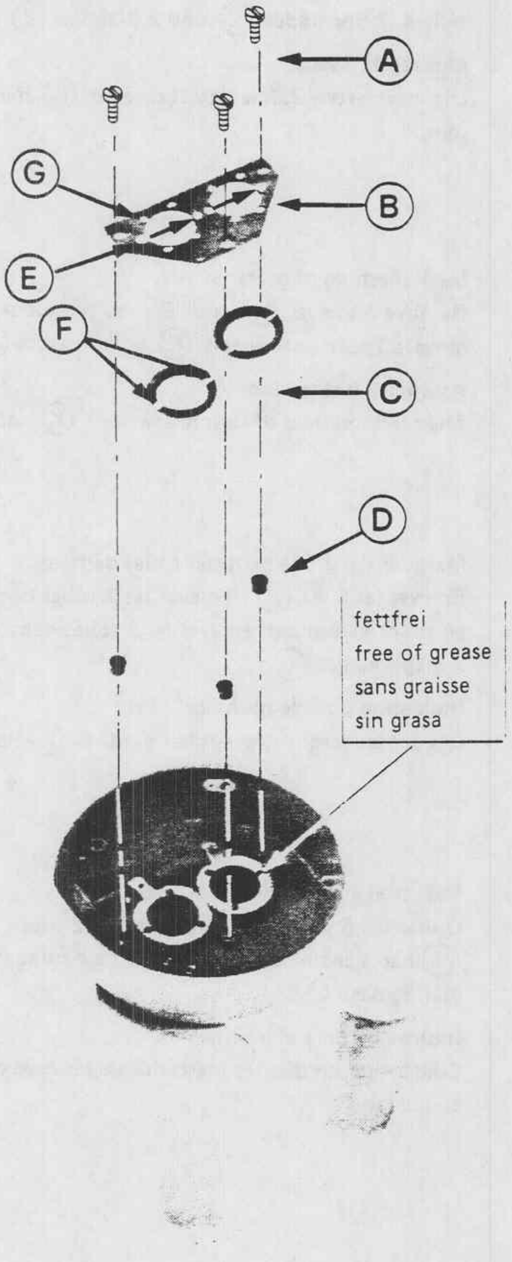
Marcar el engrane de los dientes. No confundir las ruedas dentadas entre sí.
Atascar el mandril Ⓐ entre la caja y la rueda dentada. Quitar los 3 tornillos Ⓑ y el tubo porta-oculares Ⓒ , tirándolo hacia abajo. Quitar el mandril Ⓐ . Quitar el resorte Ⓓ el tampón Ⓔ y los 3 tornillos Ⓕ . Tirar el tubo porta-oculares Ⓖ hacia abajo. Quitar las 2 ruedas dentadas Ⓗ y los 2 diafragmas Ⓘ .

Indicación para el montaje:

1. Montar el tubo porta-oculares Ⓖ , la rueda dentada y el diafragma.
2. Montar el tampón Ⓔ y el resorte Ⓓ .
3. Atascar el mandril Ⓐ entre la caja y la rueda dentada.
4. Montar el tubo porta-oculares Ⓒ , la rueda dentada y el diafragma. Cuidar que los dientes marcados de las ruedas dentadas Ⓗ coincidan.

TUBEN OHNE TRIEB
TUBES WITHOUT DRIVE

TUBES SANS VIS D'ECARTEMENT
TUBOS SIN TORNILLO DE REGULACION



fettfrei
free of grease
sans graisse
sin grasa

3 Schrauben Ⓐ, Platte Ⓑ, 2 Scheiben Ⓒ und 3 Büchsen Ⓓ demontieren.

Montagehinweis:
Die spitzen Schrauben Ⓔ müssen in die Nuten Ⓕ eingreifen. Mit den Schrauben Ⓖ wird die Verstellkraft des Augenabstandes eingestellt: 14±5N am Okularrohr gemessen.

Remove 3 screws Ⓐ, plate Ⓑ, 2 washers Ⓒ and 3 bushes Ⓓ.

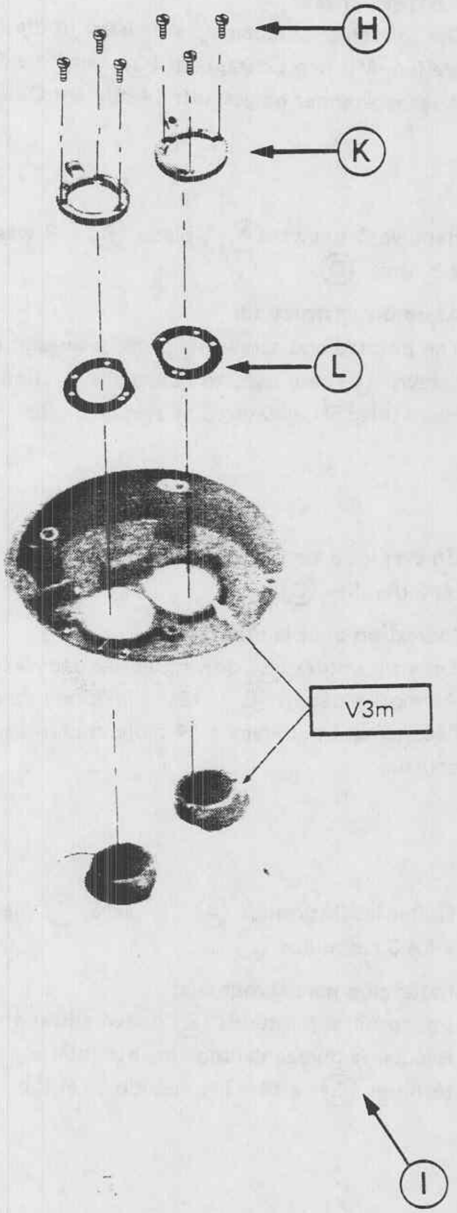
Assembly instruction:
The pointed-end screws Ⓔ must engage in recesses Ⓕ. Screws Ⓖ are used to adjust the friction for setting eye base (14N±5N, measured at eyepiece tube).

Enlever les 3 vis Ⓐ, la plaque Ⓑ, 2 rondelles Ⓒ et les 3 douilles Ⓓ.

Indication pour le montage:
Les vis pointues Ⓔ doivent entrer dans les rainures Ⓕ. Au moyen des vis Ⓖ, régler la dureté du mouvement de l'écartement pupillaire à 14 ± 5N, mesurés sur le tube porte-oculaire.

Quitar los 3 tornillos Ⓐ, la placa Ⓑ, las 2 arandelas Ⓒ y los 3 casquillos Ⓓ.

Indicación para el montaje:
Los tornillos puntudos Ⓔ deben entrar en las ranuras Ⓕ. Regular la dureza del movimiento interpupilar mediante los tornillos Ⓖ a 14 ± 5N medido en el tubo porta-oculares.



Zahnradeingriff markieren.
6 Schrauben Ⓗ demontieren, 2 Okularrohre Ⓘ nach unten ziehen, 2 Stirnräder Ⓚ und 2 Blenden Ⓛ demontieren.

Montagehinweis:
Die markierten Zähne der Stirnräder Ⓚ müssen im Eingriff sein.

Mark meshing of gears
Remove 6 screws Ⓗ , pull 2 eyepiece tubes Ⓘ downward, remove 2 spur gearwheels Ⓚ and 2 masks Ⓛ

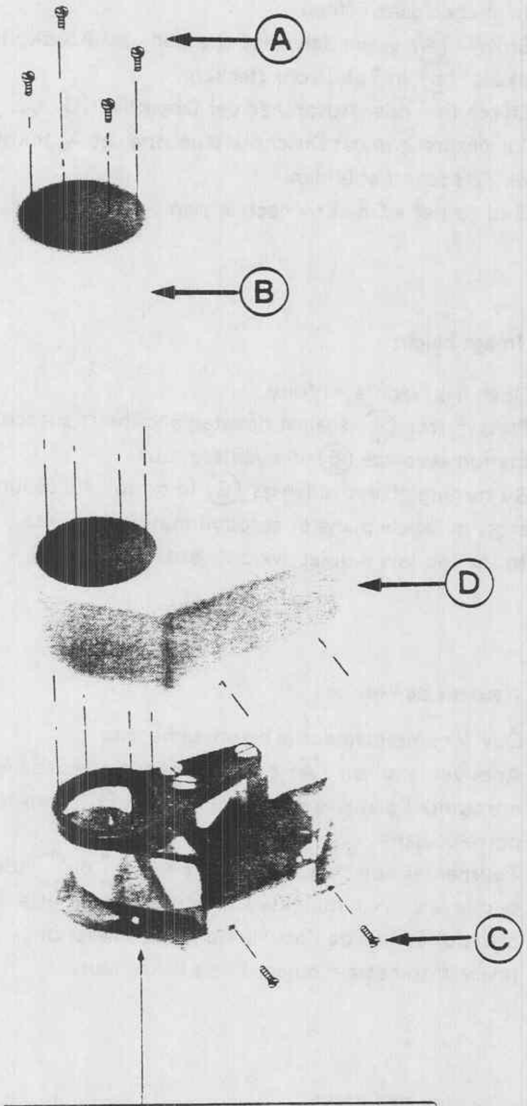
Assembly instruction:
The teeth marked of spur gearwheels Ⓚ must engage

Marquer l'engrènement des roues dentées.
Enlever les 6 vis Ⓗ , enlever les 2 tubes portes-oculaires Ⓘ en tirant vers enbas, enlever les 2 roues dentées Ⓚ et les 2 diaphragmes Ⓛ .

Indication pour le montage:
Les dents marquées des roues dentées Ⓚ doivent coïncider

Marcar el engrane de los dientes.
Quitar los 6 tornillos Ⓗ y tirar los 2 tubos porta-oculares Ⓘ hacia abajo. Quitar las 2 ruedas dentadas Ⓚ y los 2 diafragmas Ⓛ .

Indicación para el montaje:
Cuidar que los dientes marcados de las ruedas dentadas Ⓚ coincidan.



Komplette Einheit, nicht demontieren!
Complete unit, do not dismantle!
Unité complète, ne pas démonter!
Unidad completa, no desarmer

4 Schrauben Ⓐ, Okularrohr Ⓑ, 4 Schrauben Ⓒ und Deckel Ⓓ demontieren.

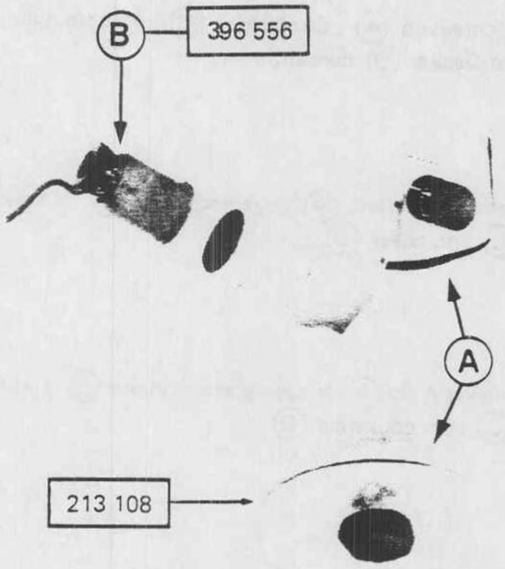
Remove 4 screws Ⓐ, eyepiece tube Ⓑ, 4 screws Ⓒ and cover Ⓓ.

Enlever 4 vis Ⓐ le tube porte-oculaire Ⓑ, les 4 vis Ⓒ et le couvercle Ⓓ

Quitar los 4 tornillos Ⓐ, el tubo porta-oculares Ⓑ, los 4 tornillos Ⓒ y la tapa Ⓓ

JUSTIERANLEITUNG
ADJUSTMENT INSTRUCTIONS

INSTRUCTIONS DE REGLAGE
INSTRUCCIONES PARA EL AJUSTE

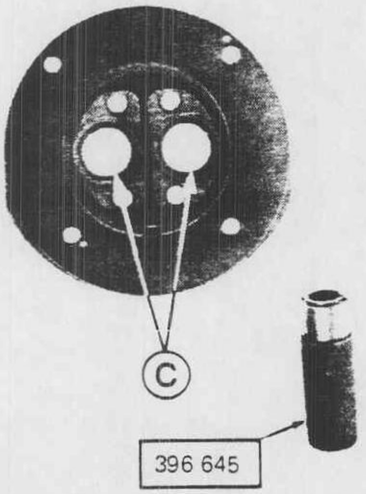


Spiegel auf Plastilin oder Schaumgummi legen.

Place mirror on foam rubber or plasticine.

Poser le miroir sur une couche de plasteline ou une lame de mousse.

Colocolar el espejo encima de plastelina o una goma-espuma.



Bildhöhe

Irisblende ganz öffnen.
Spiegel Ⓐ gegen Schwalbe drücken und Autokollimationsokular Ⓑ in Tubusrohr stecken.
Durch Ein- oder Ausdrehen der Objektive Ⓒ das Leuchtkreuz in der Strichplattenebene des Autokollimationsokulars scharf abbilden.
Bild zu tief = Objektiv nach aussen

Image height

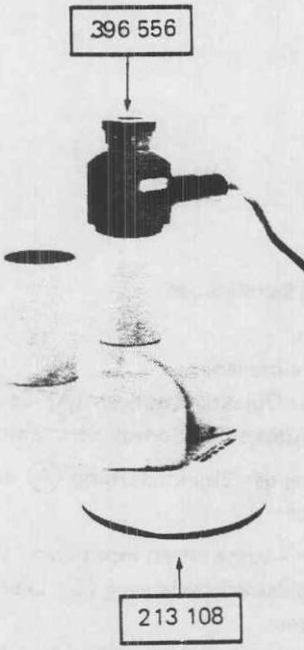
Open iris diaphragm fully
Press mirror Ⓐ against dovetail and insert autocollimation eyepiece Ⓑ in eyepiece tube
By turning objective lenses Ⓒ in or out, focus luminous cross in reticle plane of autocollimation eyepiece
Image too low = objective outwards

Hauteur de l'image

Ouvrir complètement le diaphragme iris.
Appuyer le miroir Ⓐ contre la queue d'aronde et introduire l'oculaire d'autocollimation Ⓑ dans le tube porte-oculaire.
Tourner les objectifs Ⓒ dans le sens ↻ ou ↺ jusqu'à ce que la croix lumineuse forme une image nette dans le plan du réticule de l'oculaire d'autocollimation.
Image trop basse = objectif vers l'exterieur

Altura de imagen

Abrir completamente el diafragma iris.
Apoyar el espejo Ⓐ contra la cola de milano e introducir el ocular de autocolimación Ⓑ en el tubo porta oculares.
Girando los objetivos Ⓒ en el sentido ↻ o ↺ formar una imagen nítida de la cruz luminosa en el plano del retículo del ocular de autocolimación.
Imagen demasiado baja = objetivo hacia afuera



Binokulare Justierung Geradtuben

Irisblende ganz öffnen.
Augenabstand auf 65mm einstellen.
Durch Verschieben der Objektivfassungen Ⓐ Leuchtkreuz zur Strichplatte des Autokollimationsokulars zentrieren.

Toleranz:

Die Leuchtkreuze beider Rohre müssen innerhalb des kleinen Rechteckes liegen. Die Höhendifferenz vom linken zum rechten Rohr darf nicht grösser sein, als die Hälfte der Höhe des kleinen Rechteckes. Diese Werte sind im ganzen Augenabstandsverstellbereich einzuhalten.

Binocualr adjustment of straight tubes

Open iris diaphragm fully
Set eye base to 65mm
By displacing objective-lens mounts Ⓐ , centre luminous cross on reticle of autocollimation eyepiece

Tolerance:

The luminous crosses of both tubes must lie within the small rectangle. The height difference between left and right tube must not exceed half the height of the small rectangle. These values must be maintained over the whole extent of the eye-base range

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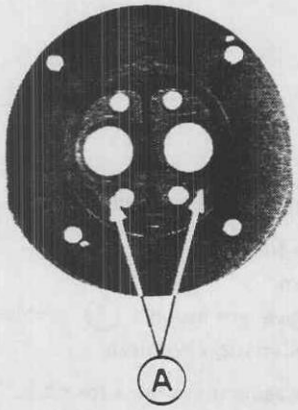

Réglage binoculaire des tubes droits

Ouvrir complètement le diaphragme iris.
Régler la distance interpupillaire sur 65mm.
Centrer la croix lumineuse par rapport au réticule de l'oculaire d'autocollimation en déplaçant les montures d'objectif Ⓐ .

Tolérance

Les croix lumineuses des deux tubes ne doivent pas dépasser le petit rectangle. La différence verticale entre le tube gauche et le tube droit ne doit pas dépasser la moitié de la hauteur du petit rectangle. Ces valeurs doivent êtres maintenues sur toute la distance d'écartement des tubes

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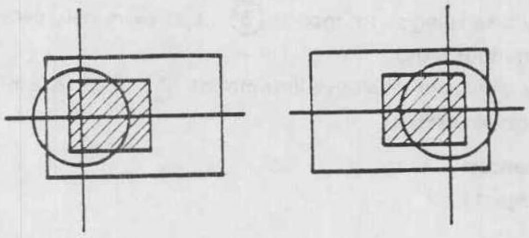


links
left
gauche
izquierdo

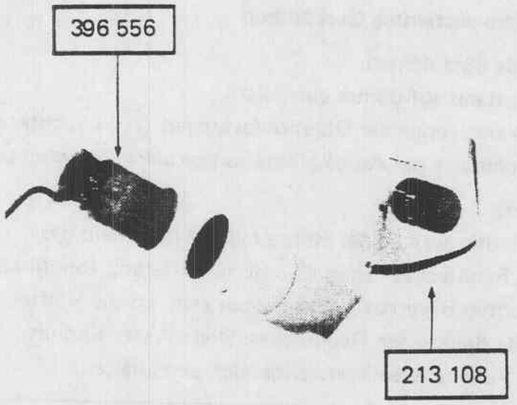
rechts
right
droite
derecho

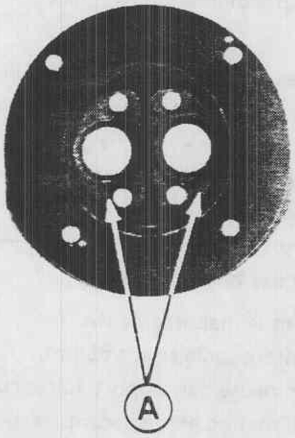
Ajuste binocular de los tubos derechos

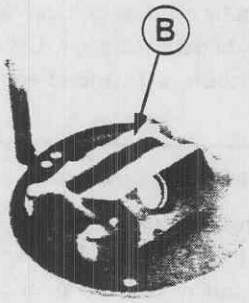
Abrir completamente el diafragma iris
Regular la distancia interpupilar en 65mm.
Centrar la cruz luminosa en relación al retículo del ocular de autocolimación, desplazando las monturas de objetivo Ⓐ .

Tolerancia:

La cruz luminosa de ambos tubos deben encontrarse dentro del rectángulo pequeño. La diferencia vertical entre la cruz del tubo izquierdo y la del tubo derecho no debe ser mas grande que la mitad del rectángulo pequeño. Estos valores deben ser mantenidos en todo el sector de movimiento de los tubos.







Binokulare Justierung Schrägtuben.

Irisblende ganz öffnen.
Augenabstand 65mm eintellen.
Durch Verschieben der Objektivfassungen Ⓐ Leuchtkreuz zur Strichplatte des Autokollimationsokulars zentrieren.

Ist die Justierbewegung der Objektivfassung Ⓐ zu klein, justiere folgendermassen:

1. Objektivfassung Ⓐ ausgemittelt montieren.
2. Durch Verschieben der Prismafassung Ⓑ Leuchtkreuz annähernd zentrieren.
3. Durch Verschieben der Objektivfassung Ⓐ Leuchtkreuz genau zentrieren.

Toleranzen:
Siehe Seite 11

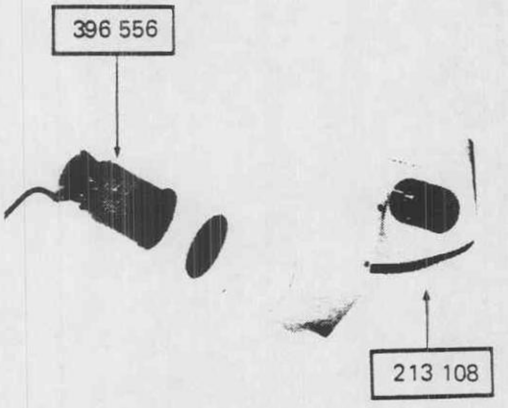
Binocular adjustment of inclined tubes

Open iris diaphragm fully.
Set eyebase to 65mm.
By displacing objective-lens mounts Ⓐ, centre luminous cross on reticle of autocollimation eyepiece.

If the amount of movement available for objective-lens mount Ⓐ is inadequate, adjust as follows:

1 Place objective-lens mount Ⓐ in mid-position
2 By displacing prism mount Ⓑ, approximately centre luminous cross
3 By displacing objective-lens mount Ⓐ, centre luminous cross accurately

Tolerances:
see page 11



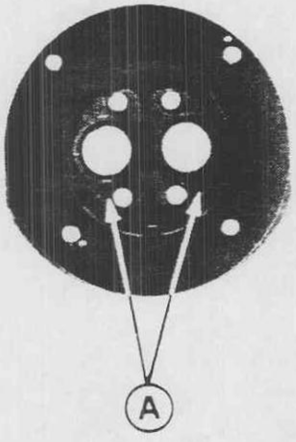
Réglage binoculaires des tubes inclinés.

Ouvrir complètement le diaphragme iris.
Régler la distance interpupillaire sur 65mm.
Centrer la croix lumineuse par rapport au réticule de l'oculaire d'autocollimation en déplaçant les montures d'objectif Ⓐ

Si l'amplitude de réglage de la monture d'objectif Ⓐ est trop petite, proceder de la manière suivante:

1. Monter la monture d'objectif Ⓐ en position centrée.
2. En déplaçant la monture de prisme Ⓑ , centrer approximativement la croix lumineuse.
3. En déplaçant la monture d'objectif Ⓐ , centrer exactement la croix lumineuse.

Tolérances:
Voir page 11



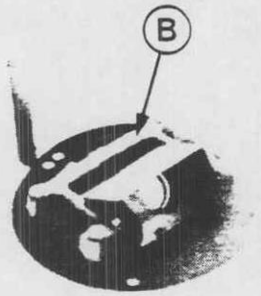
Ajuste binocular de los tubos inclinados.

Abrir completamente el diafragma iris
Regular la distancia interpupilar en 65mm.
Centrar la cruz luminosa en relación al retículo del ocular de autocolimación, desplazando las monturas de objetivo Ⓐ

Si el alcance de ajuste de la montura de objetivo Ⓐ es demasiado pequeño, proceder de la manera siguiente.

1. Montar la montura de objetivo Ⓐ en posición céntrica.
2. Centrar aprox. la cruz luminosa, desplazando la montura de prisma Ⓑ .
3. Centrar exactamente la cruz luminosa, desplazando la montura de objetivo Ⓐ .

Tolerancias:
Vea pág 11



WILD
HEERBRUGG

SERVICE MANUAL

M610, M630, M650

OPTIKTRÄGER
OPTICS CARRIER
CORPS DE MICROSCOPE
PORTAOPTICAS

Ausgabe 12/80
702-Ws/hmo

INHALTSVERZEICHNIS
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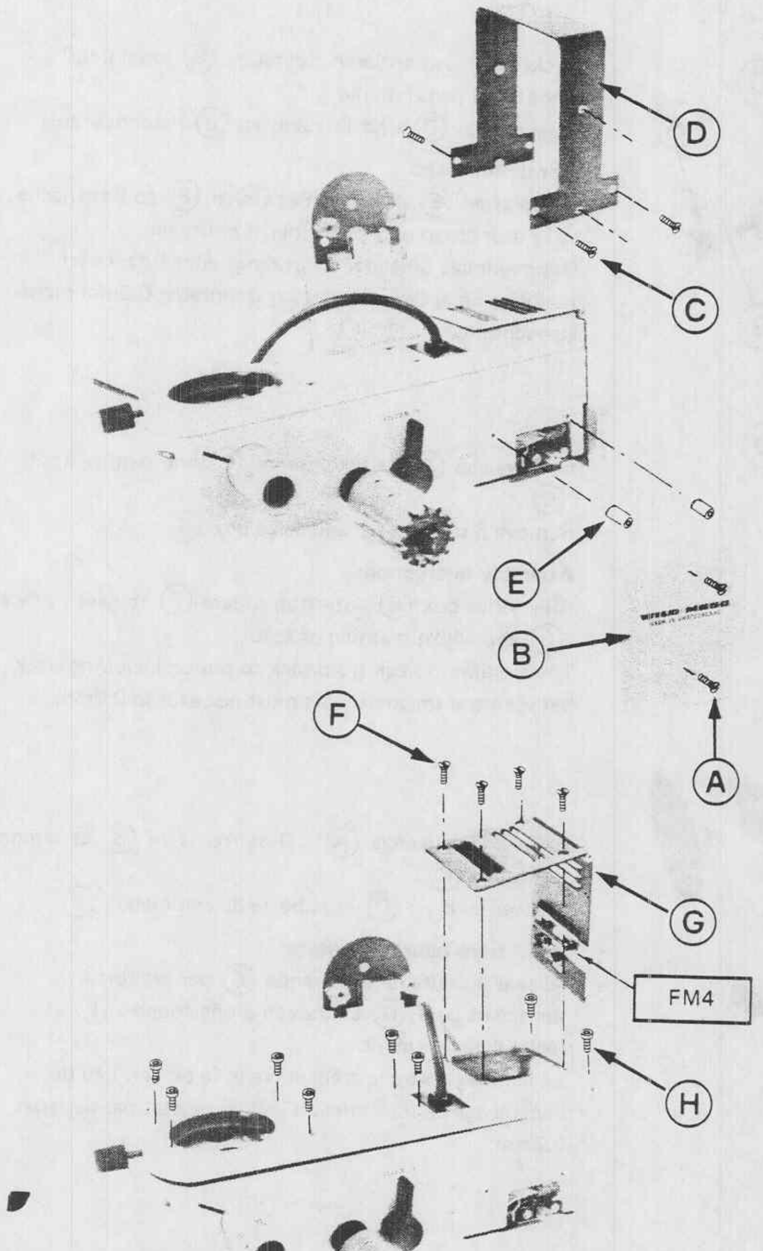


4 Schrauben Ⓐ, 2 Schutzbleche Ⓑ, 4 Schrauben Ⓒ, Bügel Ⓓ und Distanzbüchsen Ⓔ demontieren.

Remove 4 screws Ⓐ, 2 protective plates Ⓑ, 4 screws Ⓒ, stirrup Ⓓ and spacing bushes Ⓔ

Enlever les 4 vis Ⓐ, les 2 tôles de protection Ⓑ, les 4 vis Ⓒ, l'étrier Ⓓ et les douilles Ⓔ.

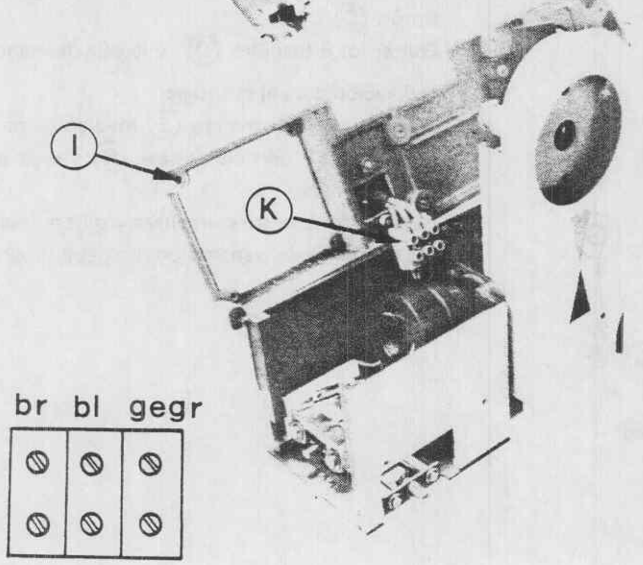
Quitar los 4 tornillos Ⓐ, las 2 chapas de protección Ⓑ, los 4 tornillos Ⓒ, el estribo Ⓓ y los casquillos Ⓔ.

4 Schrauben Ⓕ, Rückwand Ⓖ, 8 Schrauben Ⓗ demontieren. Ringschwalbe Ⓘ hochklappen, Kabelanschluss Ⓚ lösen.

Remove 4 screws Ⓕ, back plate Ⓖ, 8 screws Ⓗ Hinge up dovetail ring Ⓘ. Loosen cable connection Ⓚ

Enlever les 4 vis Ⓕ, le dos Ⓖ et les 8 vis Ⓗ. Basculer la queue d'aronde Ⓘ vers le haut et desserrer les connexions Ⓚ.

Quitar los 4 tornillos Ⓕ, la tapa trasera Ⓖ y los 8 tornillos Ⓗ. Bascular la cola de milano Ⓘ hacia arriba y soltar la conexión de cable Ⓚ.



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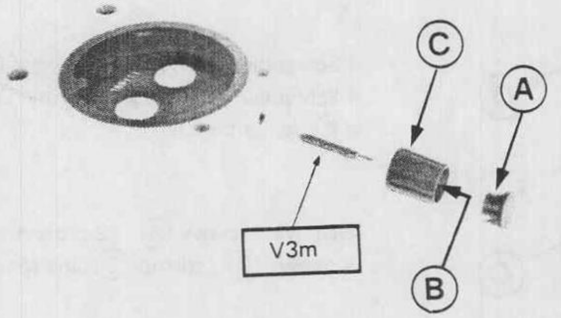
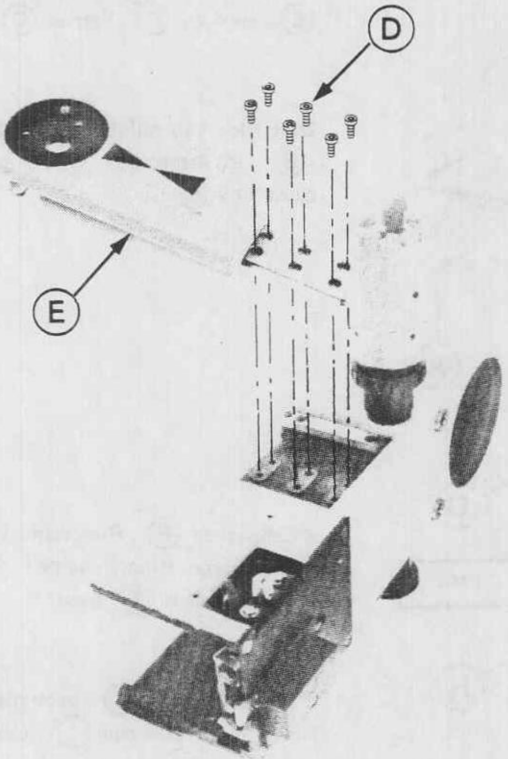
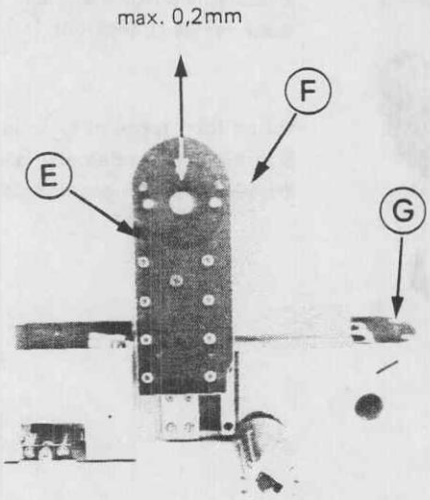






Deckel Ⓐ demontieren, Schraube Ⓑ lösen und Knopf Ⓒ demontieren.
6 Schrauben Ⓓ und Triebkasten Ⓔ demontieren.

Montagehinweis:
Triebkasten Ⓔ mit Anschlagwinkel Ⓕ zu Basisfläche Ⓖ ausrichten und Zahneingriff einstellen.
Das maximale Spiel der Zahnstange zum Ritzel darf inklusive Spiel der Übersetzungszahnräder 0,2mm nicht überschreiten.

Remove cap Ⓐ, slacken screw Ⓑ and remove knob Ⓒ.
Remove 6 screws Ⓓ and drive box Ⓔ

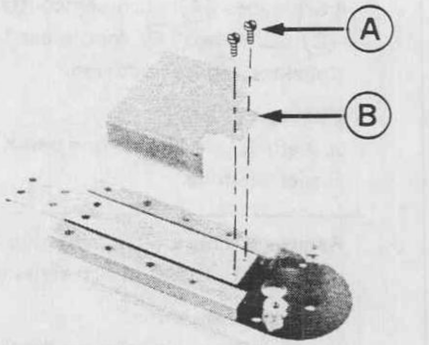
Assembly instruction:
Align drive box Ⓔ with stop square Ⓕ to base surface Ⓖ and adjust meshing of teeth.
The maximum slack from rack to pinion including slack between transmission gears must not exceed 0.2mm

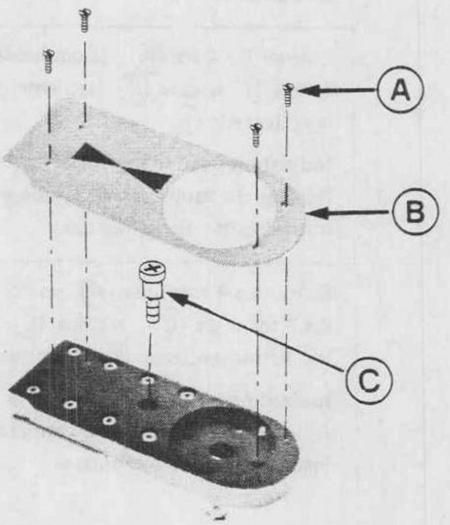
Enlever le couvercle Ⓐ. Desserrer la vis Ⓑ et démonter le bouton Ⓒ.
Enlever les 6 vis Ⓓ et la boîte de commande Ⓔ

Indications pour le montage:
Aligner la boîte de commande Ⓔ par rapport à la surface de base Ⓖ au moyen d'une équerre Ⓕ et régler l'engrènement.
Le jeu max. entre la crémaillère et le pignon (jeu de l'engrenage de transmission inclus) ne doit pas dépasser 0,2mm.

Quitar la tapa Ⓐ, aflojar el tornillo Ⓑ y quitar el botón Ⓒ.
Quitar los 6 tornillos Ⓓ y la caja de mando Ⓔ.

Indicación para el montaje:
Alinear la caja de mando Ⓔ mediante una escuadra Ⓕ puesta en la superficie de base Ⓖ y regular el engrane de los dientes.
El juego máx. entre cremallera y piñon, inclusive el juego del engranaje de transmisión, no debe superar 0,2mm.





6 Schrauben Ⓐ, 2 Schutzbleche Ⓑ und Anschlag Ⓒ demontieren.
4 Schrauben Ⓓ, 4 U/Scheiben Ⓔ, Führungsleiste Ⓕ, Schlitten Ⓖ, Rollen Ⓗ, Käfige Ⓘ und Dreieckstäbe Ⓚ demontieren.

Montagehinweis:
Triebkasten montieren und im Schraubstock an 3 Punkten Ⓛ klemmen bis sich der Schlitten mit ca. 0,8-1N schieben lässt.

Remove 6 screws Ⓐ, 2 protective plates Ⓑ and stop Ⓒ.
Remove 4 screws Ⓓ, 4 washers Ⓔ, guide rod Ⓕ, slide Ⓖ, rollers Ⓗ, cages Ⓘ and triangular rods Ⓚ

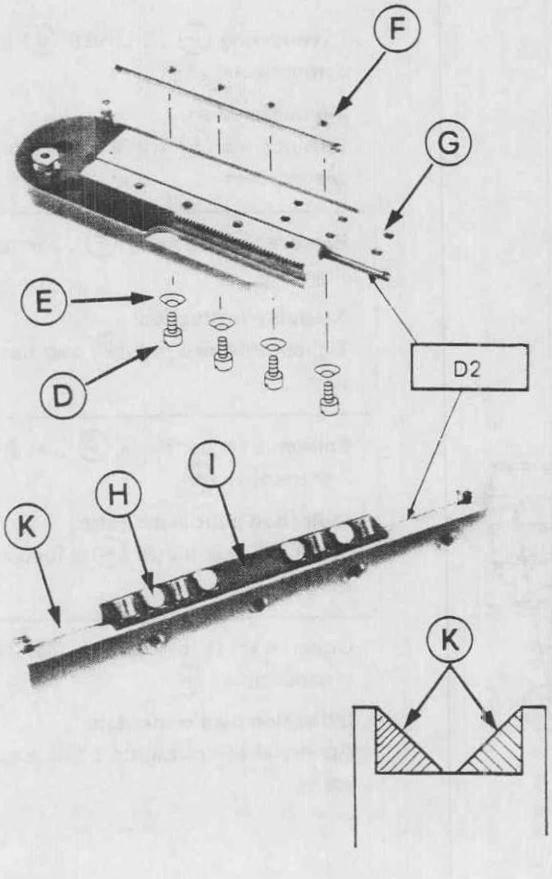
Assembly instruction:
Fit drive box and clamp in vice at 3 points Ⓛ until slide can be displaced with c 0.8N to 1N

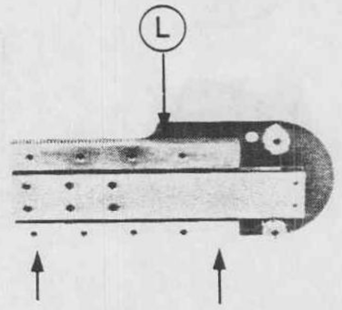
Enlever les 6 vis Ⓐ, les 2 tôles de protection Ⓑ et la butée Ⓒ.
Enlever les 4 vis Ⓓ, les 4 rondelles Ⓔ, la barre de guidage Ⓕ, le coulisseau Ⓖ, les rouleaux Ⓗ, les cages Ⓘ et les barres triangulaires Ⓚ.

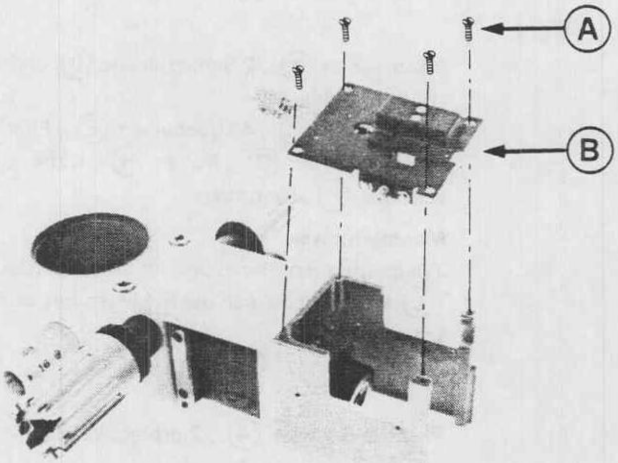
Indication pour le montage:
Monter la boîte de commande et la serrer dans un étau en appuiant sur les 3 points Ⓛ jusqu'à ce que le coulisseau soit déplacé par env. 0,8-1N

Quitar los 6 tornillos Ⓐ, las 2 chapas de protección Ⓑ y el tope Ⓒ.
Quitar los 4 tornillos Ⓓ, las 4 arandelas Ⓔ, el listón de guía Ⓕ, la corredera Ⓖ, los rodillos Ⓗ la jaula de bolillas Ⓘ y las barras triangulares Ⓚ.

Indicación para el montaje:
Montar la caja de mando y apretar la en unamorsa apoyándola en los 3 puntos Ⓛ hasta que la corredera se deje desplazar con aprox. 0,8-1N.







4 Schrauben Ⓐ, Lampenschlitten Ⓑ, 2 Schrauben Ⓒ, Unterlage Ⓓ (nur in der 1. Serie eingebaut) und Kollektor Ⓔ demontieren.

Montagehinweis:

Justierung Lampenschlitten und Kondensor siehe Justieranleitung.

Remove 4 screws Ⓐ, lamp slide Ⓑ, 2 screws Ⓒ, backing Ⓓ (fitted in first series only) and collector Ⓔ

Assembly instruction:

To adjust lamp slide and condenser, see Adjustment Instructions

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Enlever les 4 vis Ⓐ, le coulisseau de lampe Ⓑ, les 2 vis Ⓒ, la cale Ⓓ (seulement dans la 1 ère série) et le collecteur Ⓔ

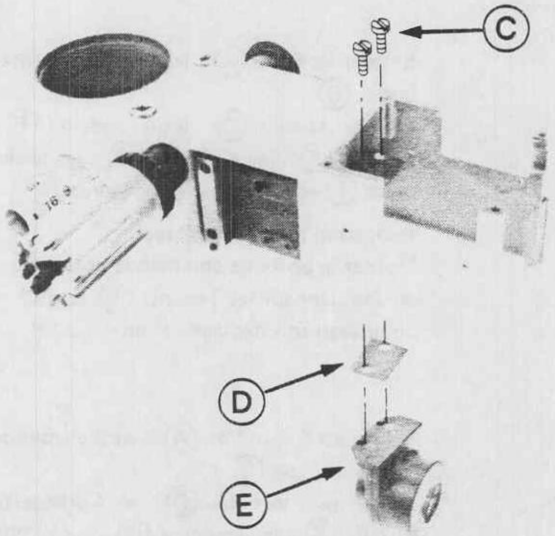
Indication pour le montage:

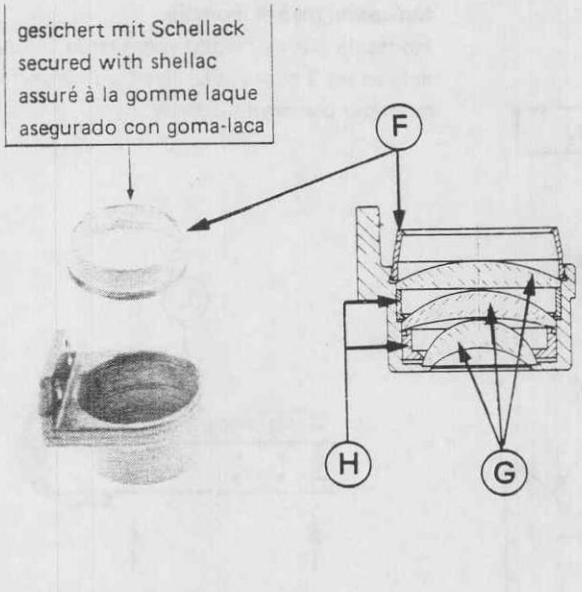
Réglage du coulisseau de lampe et du condenseur, voir instructions pour le réglage.

Quitar los 4 tornillos Ⓐ, la corredera de lámpara Ⓑ, los 2 tornillos Ⓒ, el calce Ⓓ (solamente montado en los instrumentos de la 1. serie) y el colector Ⓔ.

Indicación para el montaje:

Ajuste de la corredera de lámpara y del condensor, vea instrucciones para el ajuste.





Gewindering Ⓕ, 3 Linsen Ⓖ und Distanzringe Ⓗ demontieren.

Montagehinweis:

Gewindering Ⓕ anziehen und ca. 1/8 Umdrehung wieder lösen.

Remove threaded ring Ⓕ, 3 lenses Ⓖ and 2 spacer rings Ⓗ

Assembly instruction:

Tighten threaded ring Ⓕ and slacken off about 1/8th turn

Enlever la bague filetée Ⓕ, les 3 lentilles Ⓖ et les 2 entretoises Ⓗ.

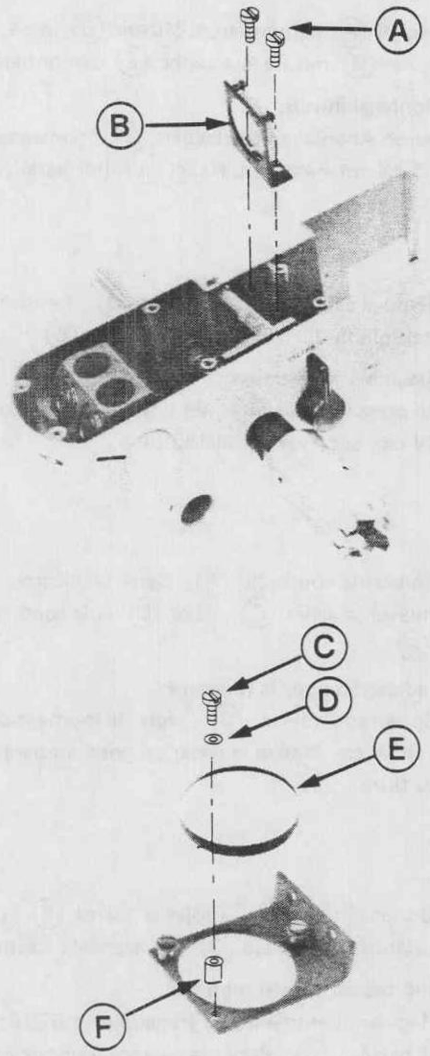
Indication pour le montage:

Serrer la bague filetée Ⓕ à fond et la desserrer sur 1/8 de tour.

Quitar el anillo roscado Ⓕ, las 3 lentes Ⓖ y los 2 distanciadores Ⓗ.

Indicación para el montaje:

Apretar el anillo roscado a fondo pués aflojarlo 1/8 de vuelta.

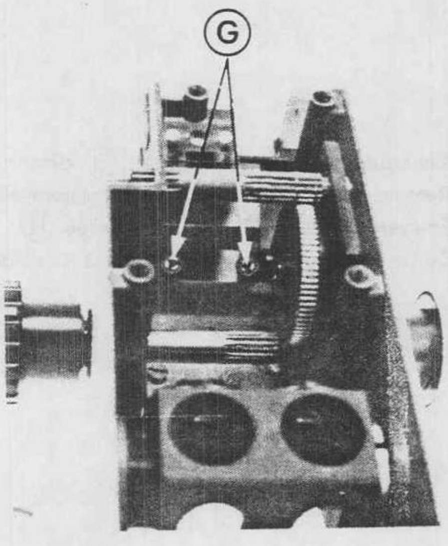


2 Schrauben Ⓐ, Filterfassung Ⓑ, 1 Schraube Ⓒ, U/Scheibe Ⓓ, Wärmeschutzfilter Ⓔ und Büchse Ⓕ demontieren.

Remove 2 screws Ⓐ, filter mount Ⓑ, 1 screw; Ⓒ, washer Ⓓ, heat absorption filter Ⓔ and bush Ⓕ

Enlever les 2 vis Ⓐ, la monture de filtre Ⓑ, 1 vis Ⓒ, la rondelle Ⓓ, le filtre anticalorifique Ⓔ et la douille Ⓕ

Quitar los 2 tornillos Ⓐ, la montura de filtro Ⓑ, 1 tornillo Ⓒ y la arandela Ⓓ, el filtro contra calor Ⓔ y el casquillo Ⓕ

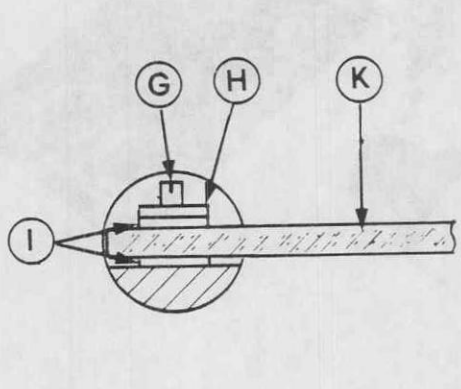


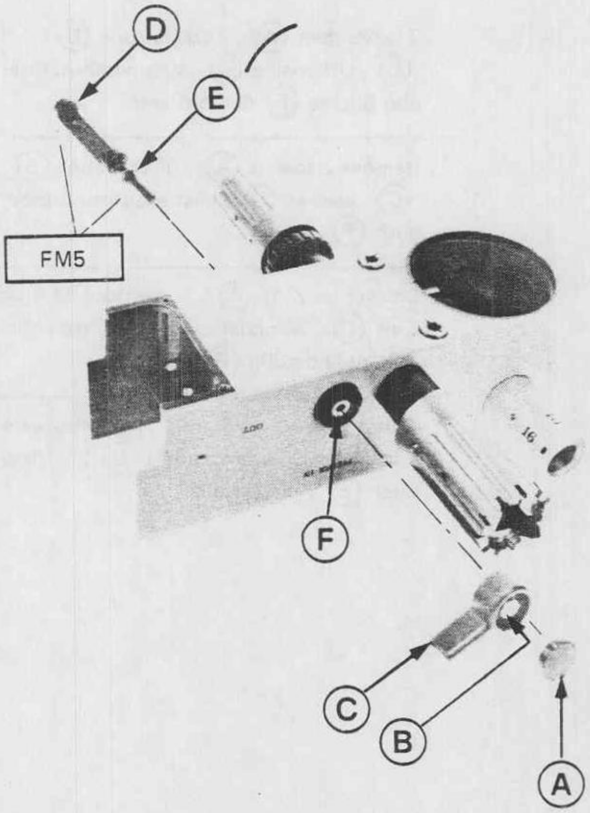
2 Schrauben Ⓖ mit Zackenring Ⓗ, 2 U/Scheiben Ⓘ und Tageslichtfilter Ⓚ demontieren.

Remove 2 screws Ⓖ with serrated ring Ⓗ, 2 washers Ⓘ and daylight filter Ⓚ

Enlever les 2 vis Ⓖ et la rondelle dentée Ⓗ, les 2 rondelles Ⓘ et le filtre lumière du jour Ⓚ

Quitar los 2 tornillos Ⓖ y la arandela estriada Ⓗ, las 2 arandelas Ⓘ y el filtro de luz del día Ⓚ





Deckel Ⓐ demontieren, Mutter Ⓑ lösen, Hebel Ⓒ , Achse Ⓓ mit Federscheibe Ⓔ demontieren.

Montagehinweis:

Durch Andrücken des Hebels Ⓒ Bremsmoment auf 1,5-3N cm einstellen. Hebel zu Filter parallel stellen.

Remove cap Ⓐ , slacken nut Ⓑ , remove lever Ⓒ and spindle Ⓓ with spring washer Ⓔ

Assembly instruction:

By pressing lever Ⓒ , set braking torque to 1.5N to 3N cm. Set lever parallel to filter

Enlever le couvercle Ⓐ , desserrer l'écrou Ⓑ et enlever le levier Ⓒ , l'axe Ⓓ et la rondelle élastique Ⓔ

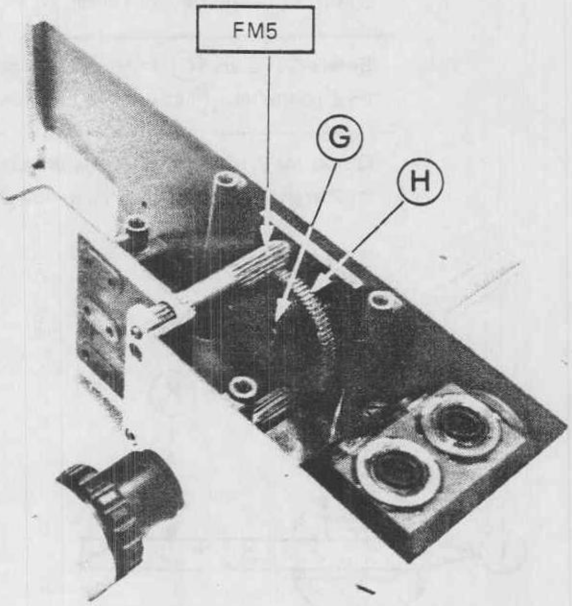
Indication pour le montage:

En serrant le levier Ⓒ , régler le moment de freinage à 1,5-3N cm. Mettre le levier en position parallèle par rapport au filtre.

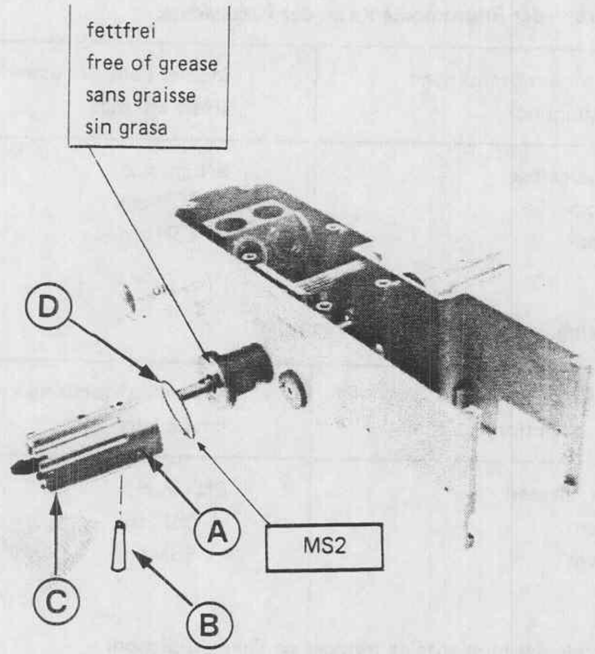
Quitar la tapa Ⓐ , aflojar la tuerca Ⓑ , quitar la palanca Ⓒ , el eje Ⓓ y la arandela elástica Ⓔ .

Indicación para el montaje:

Regular el momento de frenado en 1,5-3N cm, apretando la palanca Ⓒ . Poner la palanca en posición paralela en relación al filtro.



Sicherungsring Ⓖ und Stirnrad Ⓗ demontieren.
Remove locking ring Ⓖ and spur gearwheel Ⓗ
Enlever le circlip Ⓖ et la roue dentée Ⓗ
Quitar el anillo de retención Ⓖ y la rueda dentada Ⓗ

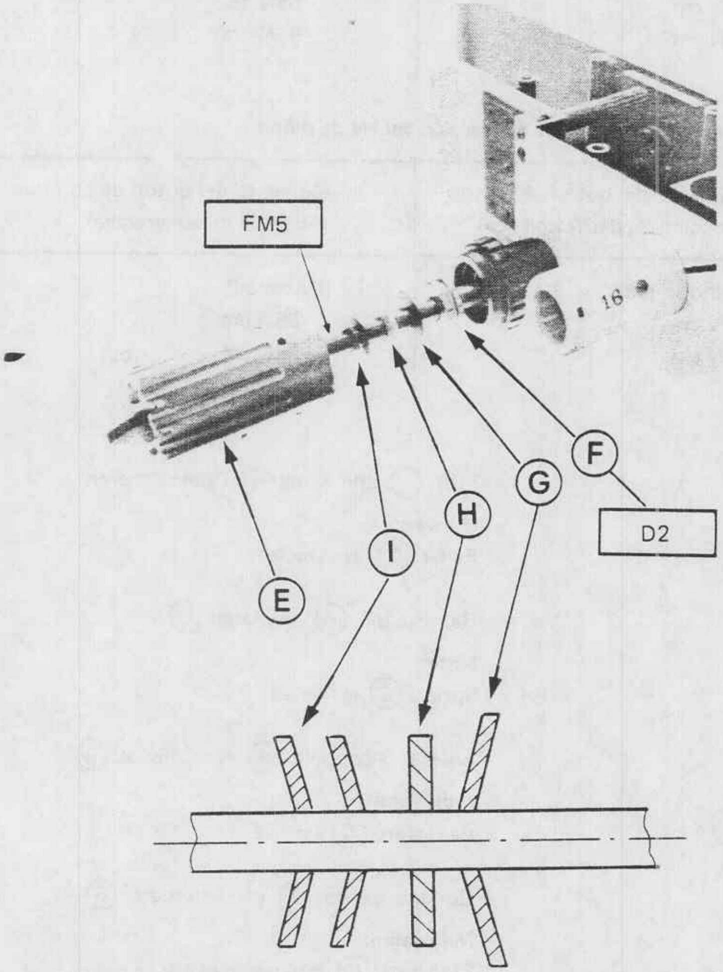


Schraube Ⓐ lösen. Kon. Stift Ⓑ, Nabe Ⓒ und O-Ring Ⓓ demontieren.
Ritzelachse Ⓔ, mit Kugellager Ⓕ, Tellerfeder Ⓖ, U/Scheibe Ⓗ und 2 Tellerfedern Ⓘ demontieren.

Montagehinweis:
Der Bremsmoment der Ritzelachse bei gelöster Bremse muss auf 8N cm ± 2 eingestellt sein.

Slacken screw Ⓐ, remove conical pin Ⓑ, hub Ⓒ and ring Ⓓ
Remove spindle Ⓔ of pinion including ball-bearing Ⓕ, cup spring Ⓖ, washer Ⓗ and 2 Belleville springs Ⓘ

Assembly instruction:
The braking torque of the pinion spindle with brake released must be adjusted to 8N cm ± 2

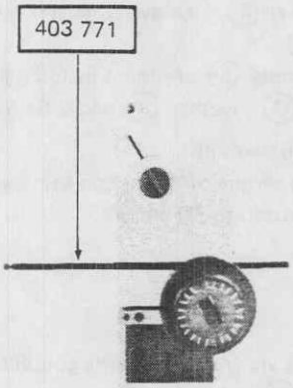


Desserrer la vis Ⓐ. Enlever la goupille conique Ⓑ, le moyeu Ⓒ et le joint Ⓓ
Enlever l'axe du pignon Ⓔ et le roulement à billes Ⓕ, le ressort à disque Ⓖ, la rondelle Ⓗ et les 2 ressorts à disque Ⓘ

Indication pour le montage:
Le moment de freinage de l'axe du pignon débloqué doit être réglé à 8N cm ± 2.

Aflojar el tornillo Ⓐ, quitar la clavija cónica Ⓑ el buje Ⓒ y la junta Ⓓ
Quitar el eje de piñon Ⓔ y el rulemán Ⓕ, los resortes de disco Ⓖ, la arandela Ⓗ y los 2 resortes de disco Ⓘ

Indicación para el montaje:
Con el freno suelto, el momento de frenado del eje de piñon debe alcanzar 8N cm ± 2



Kontrolle der Bremsmomente an der Ritzelachse:

Moment am Bremknopf (Gleitreibung)	Moment am Fokussierknopf (Haftreibung)
Bremse gelöst	8N cm ± 2
60N cm	35N cm
80N cm	55N cm

Checking braking torques at pinion shaft

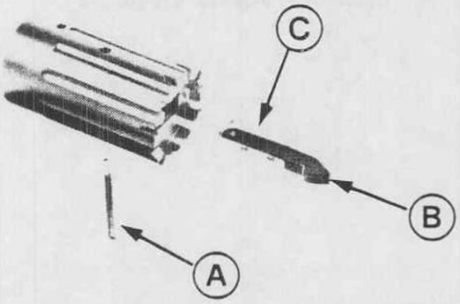
Moment at braking knob (sliding friction)	Moment at focusing knob (static friction)
brake released	8N cm ± 2
60N cm	35N cm
80N cm	55N cm

Contrôle des moments de freinage de l'axe du pignon:

Moment du bouton de freinage (Friction de glissement)	Moment du bouton de focalisation (Friction par adhérence)
Frein débloqué	8N cm ± 2
60N cm	35N cm
80N cm	55N cm

Control del momento de frenado del eje de piñon

Momento del botón de freno (Fricción de deslizamiento)	Momento del botón de enfoque (Fricción de adherencia)
Freno soltado	8N cm ± 2
60N cm	35N cm
80N cm	55N cm



Stift Ⓐ und Klinke Ⓑ demontieren.

Hinweis:
Feder Ⓒ ist genietet.

Remove pin Ⓐ and latch Ⓑ

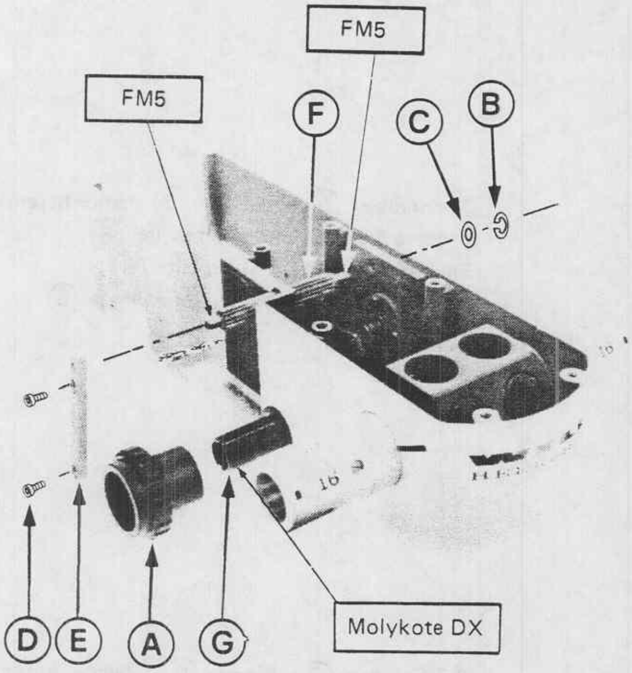
Note:
Spring Ⓒ is riveted

Enlever la goupille Ⓐ et le cliquet Ⓑ

Indication:
Le ressort Ⓒ est rivé.

Quitar el perno Ⓐ y el trinquete Ⓑ

Indicación:
El resorte Ⓒ está remachado.



Bremsknopf Ⓐ , Sicherungsring Ⓑ , U/Scheibe Ⓒ , 2 Schrauben Ⓓ Lager Ⓔ und Ritzelwelle Ⓕ demontieren.

Hinweis:

Lager Ⓖ ist eingeschraubt und mit Schellack gesichert. Im Lager Ⓖ ist noch ein Trockenlager eingepresst.

Remove brake knob Ⓐ , locking ring Ⓑ , washer Ⓒ , 2 screws Ⓓ , bearing Ⓔ and pinion shaft Ⓕ

Note:

Bearing Ⓖ is screwed into position and secured with shellac. In addition, a dry bearing is stamped into bearing Ⓖ

Enlever le bouton de freinage Ⓐ le circlip Ⓑ , la rondelle Ⓒ , les 2 vis Ⓓ , le coussinet Ⓔ et le pignon Ⓕ .

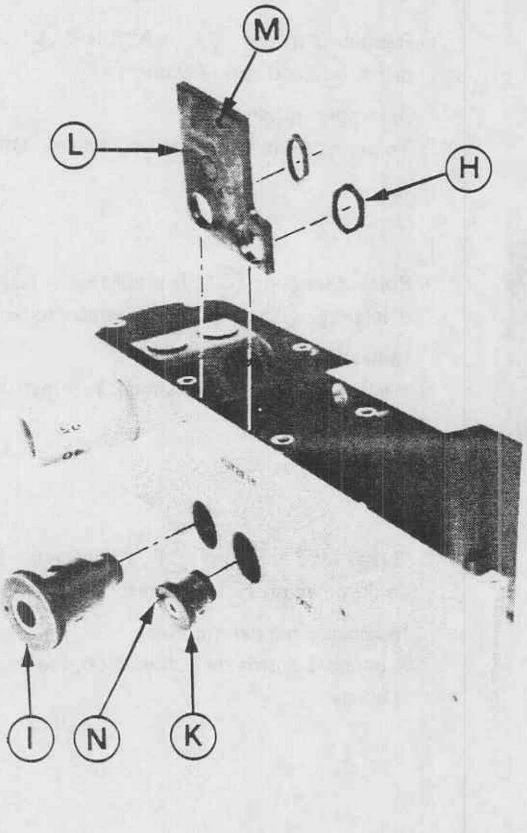
Indication:

Le coussinet G est vissé et assuré à la gomme-laque. Un coussinet à sec est monté par pression dans le coussinet Ⓖ .

Quitar el botón de freno Ⓐ , la arandela de retención Ⓑ , la arandela Ⓒ , los 2 tornillos Ⓓ , el cojinete Ⓔ y el eje de piñon Ⓕ .

Indicación:

El cojinete G está tornillado y asegurado con coma-laca. En los cojinetes Ⓖ se encuentra un cojinete a seco, montado a presión.



2 Muttern Ⓗ , Lager Ⓘ , Ⓚ und Platte Ⓛ demontieren.

Montagehinweis:

Bohrung Ⓜ mit Ritzelwelle zu Lager Ⓔ ausrichten. Anschlagstift Ⓝ in richtiger Position montieren.

Remove 2 nuts Ⓗ , bearings Ⓘ and Ⓚ and plate Ⓛ

Assembly instruction:

Align drilled hole Ⓜ with pinion shaft to bearing Ⓔ
Fit stop pin Ⓝ in correct position

Enlever les 2 écrous Ⓗ , les coussinets Ⓘ et Ⓚ et la plaque Ⓛ

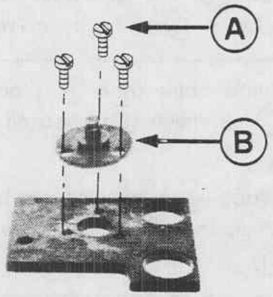
Indication pour le montage:

Aligner le trou Ⓜ et le pignon par rapport au coussinet Ⓔ . Monter la goupille de butée Ⓝ en position correcte.

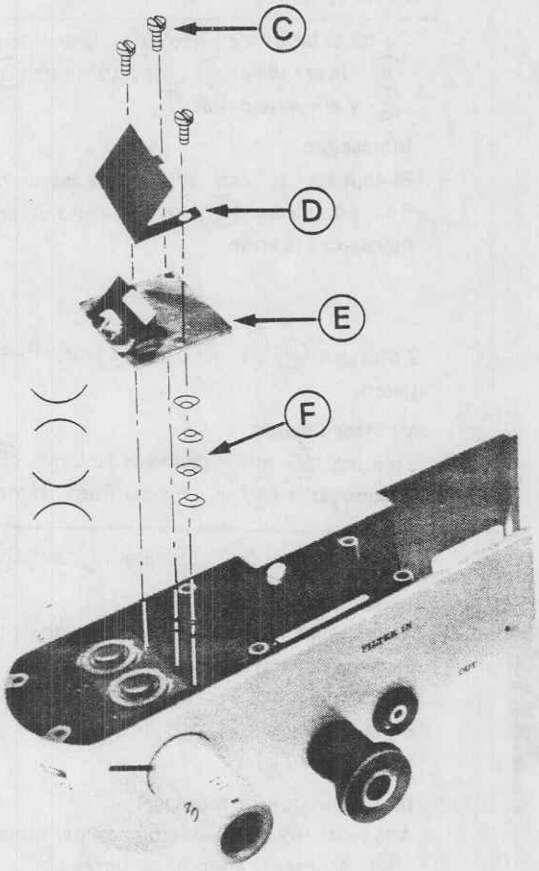
Quitar las 2 tuercas Ⓗ , los cojinetes Ⓘ e Ⓚ y la placa Ⓛ .

Indicación para el montaje:

Alinear el agujero Ⓜ con el eje de piñon en relación al cojinete Ⓔ . Montar el perno de tope Ⓝ en posición correcta.



3 Schrauben Ⓐ und Lager Ⓑ demontieren.
Remove 3 screws Ⓐ and bearing Ⓑ
Enlever les 3 vis Ⓐ et le palier Ⓑ
Quitar los 3 tornillos Ⓐ y el cojinete Ⓑ



3 Schrauben Ⓒ, Blende Ⓓ, Beleuchtungsprisma Ⓔ und Federscheiben Ⓕ demontieren.

Montagehinweis:
Justierung Beleuchtungsprisma siehe Justieranleitung.

Remove 3 screws Ⓒ, light shield Ⓓ, illumination prism Ⓔ and spring washers Ⓕ

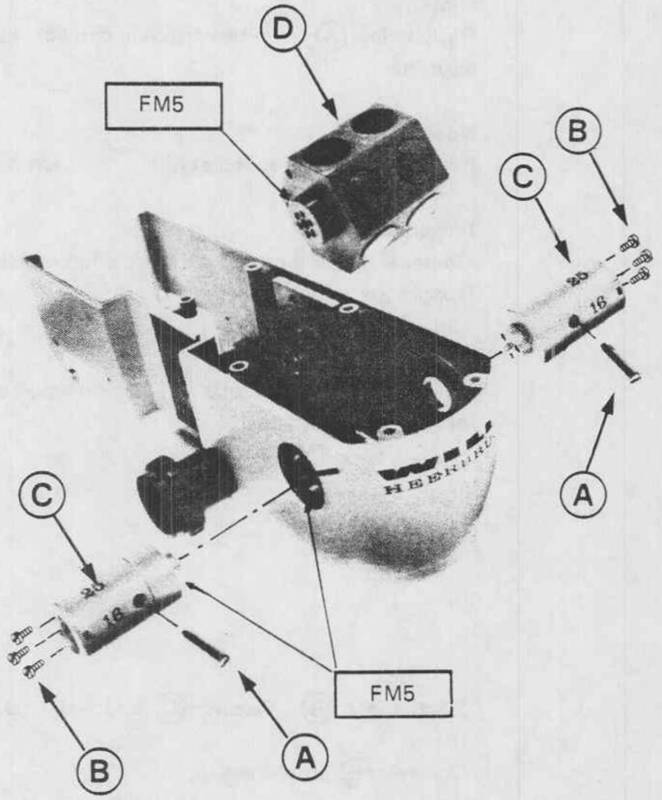
Assembly instruction:
To adjust illumination prism, see Adjustment Instructions

Enlever les 3 vis Ⓒ, le diaphragme Ⓓ, le prisme d'éclairage Ⓔ et les rondelles élastiques Ⓕ.

Indication pour le montage:
Réglage du prisme d'éclairage, voir instructions pour le réglage.

Quitar los 3 tornillos Ⓒ, el diafragma Ⓓ, el prisma de iluminación Ⓔ y los resortes a disco Ⓕ.

Indicación para el montaje:
Ajuste del prisma de iluminación, vea instrucciones para el ajuste.



2 Schrauben Ⓐ, 6 Schrauben Ⓑ, 2 Naben Ⓒ und Vergrösserungswechsler Ⓓ demontieren.

Montagehinweis:

Bei der grössten Vergrösserung müssen die kleinsten Objektive Ⓔ oben sein.

Remove 2 screws Ⓐ, 6 screws Ⓑ, 2 hubs Ⓒ and magnification changer Ⓓ

Assembly instruction:

The smallest objectives Ⓔ must face up when maximum magnification is selected

Enlever les 2 vis Ⓐ, les 6 vis Ⓑ, les 2 moyeux Ⓒ et le changeur de grossissement Ⓓ.

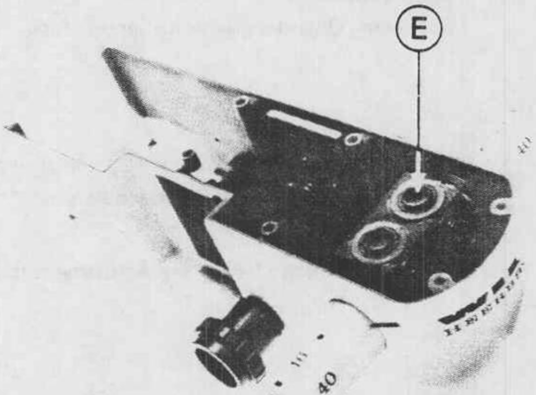
Indication pour le montage:

Pour le grossissement le plus fort, les plus petits objectifs Ⓔ doivent se trouver vers le haut.

Quitar los 2 tornillos Ⓐ, los 6 tornillos Ⓑ, los 2 bujes Ⓒ, y el cambiador de aumentos Ⓓ.

Indicación para el montaje:

Regulado el cambiador para el aumento mas grande, los objetivos mas pequeños Ⓔ deben encontrarse hacia arriba.



2 Schrauben Ⓕ, Rastfeder Ⓖ und Kugel Ⓗ demontieren.

Montagehinweis:

Justierung Rastfeder siehe Justieranleitung

Remove 2 screws Ⓕ, ratchet spring Ⓖ and ball Ⓗ

Assembly instruction:

To adjust ratchet spring, see Adjustment Instructions

Enlever les 2 vis Ⓕ, le ressort d'encliquetage Ⓖ et la bille Ⓗ.

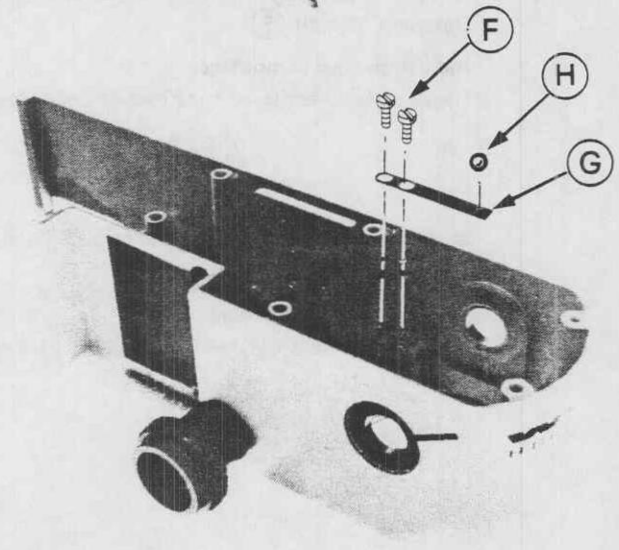
Indication pour le montage:

Réglage du ressort d'encliquetage, voir instructions pour le réglage.

Quitar los 2 tornillos Ⓕ, el resorte de trinquete Ⓖ y la bolilla Ⓗ.

Indicación para el montaje:

Ajuste del resorte de trinquete, vea instrucciones para el ajuste.



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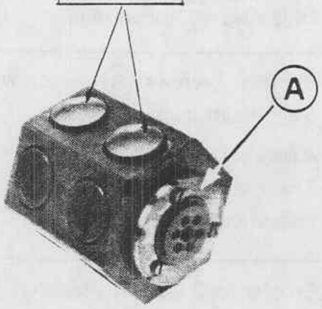
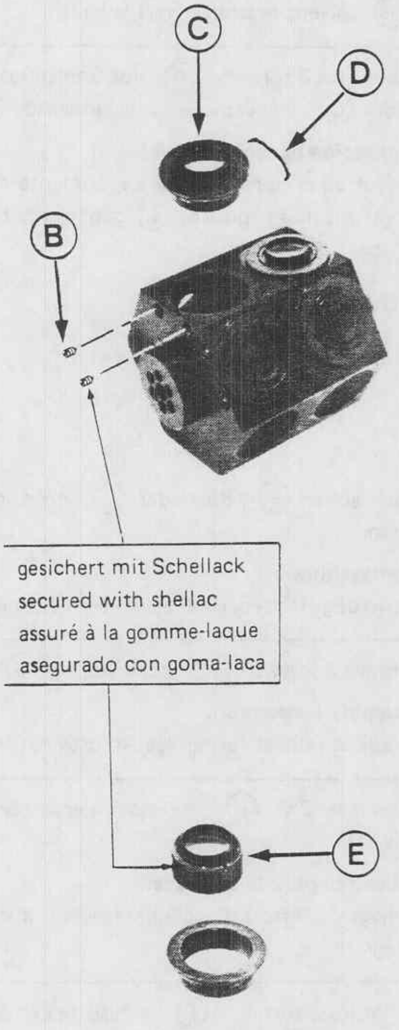


Hinweis:
Rastscheibe Ⓐ beim Montieren in den Schraubenlöchern ausmitteln.

Note:
For assembly, centre ratchet disk Ⓐ in screw holes

Indication:
Monter le disque à crans Ⓐ en position centrée par rapport aux trous filetés des vis.

Indicación:
Montar el disco de muescas Ⓐ con los agujeros para los tornillos, centrados.



gesichert mit Schellack
secured with shellac
assuré à la gomme-laque
asegurado con goma-laca

2 Schrauben Ⓑ, Fassung Ⓒ und Feder Ⓓ demontieren.
Objektiv Ⓔ ausschrauben.

Montagehinweis:
Justierung Objektive siehe Justieranleitung.

Remove 2 screws Ⓑ, mount Ⓒ and spring Ⓓ
Unscrew objective lens Ⓔ completely

Assembly instruction:
To adjust objective lenses, see Adjustment Instructions

Enlever les 2 vis Ⓑ, la monture Ⓒ et le ressort Ⓓ.
Devisser l'objectif Ⓔ.

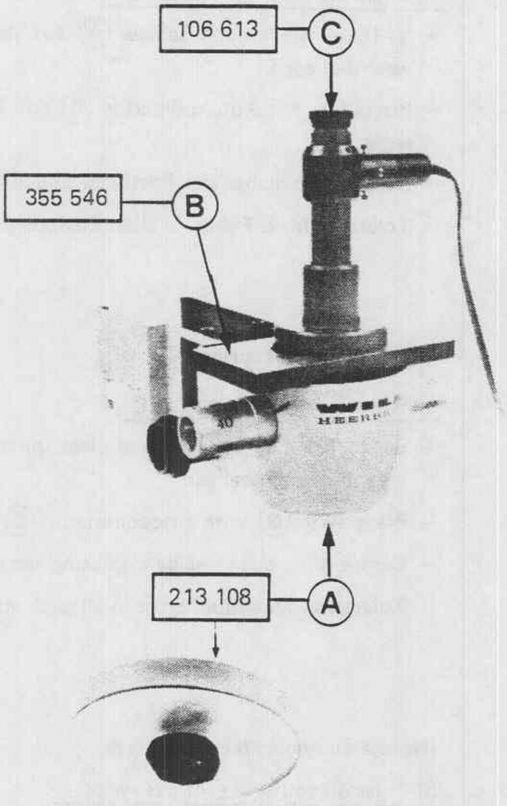
Indication pour le montage:
Réglage des objectifs, voir instructions pour le réglage.

Quitar los 2 tornillos Ⓑ, la montura Ⓒ y el resorte Ⓓ. Destornillar el objetivo Ⓔ.

Indicación para el montaje:
Ajuste de los objetivos, vea instrucciones para el ajuste.

JUSTIERANLEITUNG
ADJUSTMENT INSTRUCTIONS

INSTRUCTIONS POUR LE REGLAGE
INSTRUCCIONES PARA EL AJUSTE

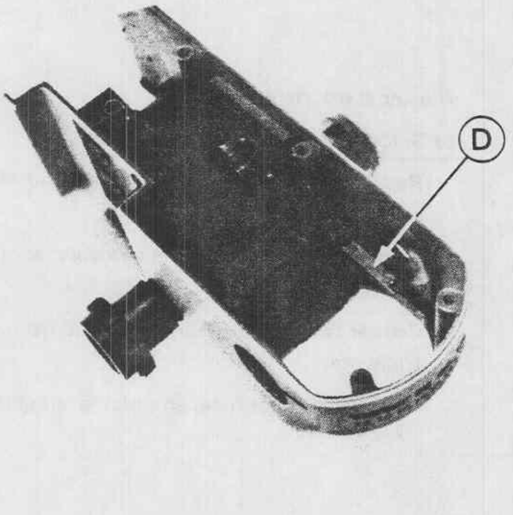


Spiegel auf Plastilin oder Schaumgummi legen.

Place mirror on foam rubber or plasticine.

Poser le miroir sur une couche de plastiline ou une lame de mousse.

Colocolar el espjeo encima de plastelina o una goma-espuma.



Rastfeder justieren

a) Objektive sind justiert:

- Optikträger auf Spiegel Ⓐ stellen. Platte Ⓑ und Autokollimator Ⓒ auf Optikträger legen.
- Grösste Vergrösserung einstellen.
- Durch Verschieben der Rastfeder Ⓓ Leuchtkreuz zentrieren.
  Toleranz: Max. Fehler in allen Rastpositionen 5′

Adjusting ratchet spring

a) with objectives adjusted:

- Place optics carrier on mirror Ⓐ
- Place plate Ⓑ and autocollimator Ⓒ on optics carrier
- Set maximum magnification
- Centre luminous cross by displacing ratchet spring Ⓓ
  Tolerance: Maximum error in all click-stop positions 5′

Réglage du ressort d'encliquetage

a) Si les objectifs sont réglés:

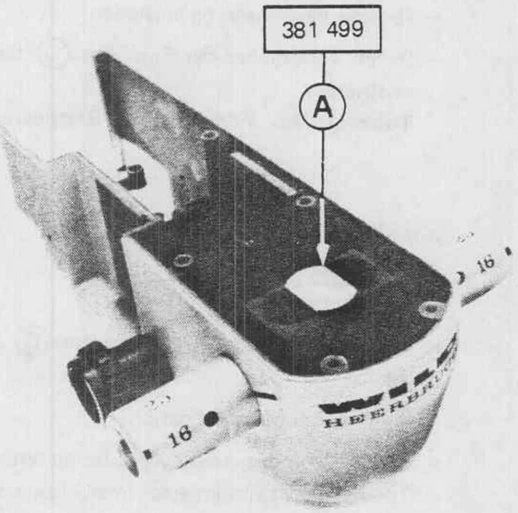
- Poser le corps du microscope sur le miroir Ⓐ .
  Poser la plaque Ⓑ et l'autocollimateur Ⓒ sur le corps du microscope.
- Régler le grossissement le plus fort.
- Centrer la croix lumineuse en déplaçant le ressort d'encliquetage Ⓓ
  Tolérance: Erreur max. dans toutes les positions d'encliquetage: 5′.

Ajustar el resorte de trinquete:

a) Si los objetivos están ajustados:

- Colocar el portaópticas en el espejo Ⓐ
- Colocar la placa Ⓑ y el autocolimador Ⓒ en el portaópticas.
- Regular el mayor aumento.
- Centrar la cruz luminosa, desplazando el resorte de trinquete Ⓓ .

  Tolerancia: Error máx. en todas las posiciones: 5′.



Rastfeder justieren.

b) Objektive sind nicht justiert:

- V=16x einstellen und Spiegel Ⓐ auf Vergrösserungswechsler legen.
- Platte Ⓑ mit Autokollimator Ⓒ auf Optikträger legen.
- Durch Verschieben der Rastfeder Leuchtkreuz zentrieren.

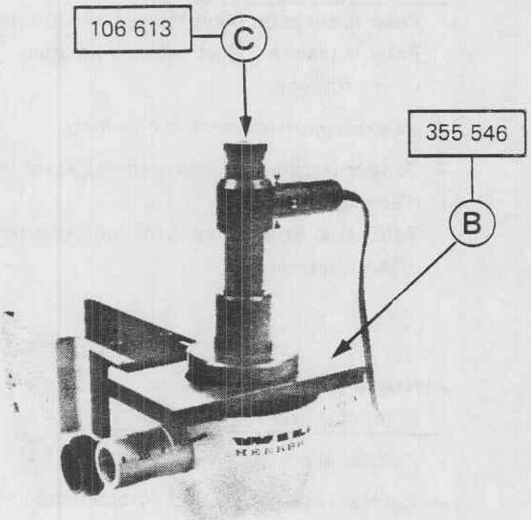
  Toleranz: Max. Fehler in allen Rastpositionen 5'.

Adjusting ratchet spring

b with objectives unadjusted:

- Set to 16x magnification and place mirror Ⓐ on magnification changer
- Place plate Ⓑ with autocollimator Ⓒ on optics carrier
- Centre luminous cross ba displacing ratchet spring

  Tolerance: Maximum error in all click-stop positions 5'



Réglage du ressort d'encliquetage

b) Si les objectifs ne sont pas réglés

- Régler le grossissement sur V 16x et poser le miroir Ⓐ sur le changeur de grossissement
- Poser la plaque Ⓑ et l'autocollimateur Ⓒ sur le corps du microscope.
- Centrer la croix lumineuse en déplaçant le ressort d'encliquetage.

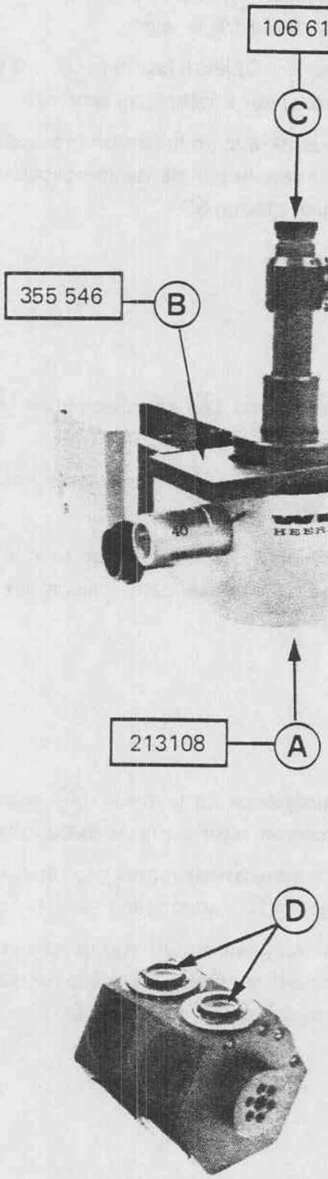
  Tolérance: Erreur max. dans toutes les positions d'encliquetage: 5'.

Ajustar el resorte de trinquete

b) Si los objetivos no están ajustados:

- Regular el aumento en V 16x y colocar el espejo Ⓐ en el cambiador de aumentos.
- Colocar la placa Ⓑ con el autocolimador Ⓒ el portaópticas.
- Centrar la cruz luminosa desplazando el resorte de trinquete.

  Tolerancia: Error máx. en todas las posiciones: 5'.



Objektive justieren.

Bildhöhe:

- Optikträger auf Spiegel Ⓐ legen und Platte Ⓑ mit Autokollimator Ⓒ auf Optikträger legen.
- Durch Ein- oder Ausschrauben der Objektive Ⓓ Leuchtkreuz in der Strichplattenebene scharf abbilden.

Bild zu tief = Objektiv nach unten.

Adjusting objective lenses

Image height:

Place optics carrier on mirror Ⓐ and place plate Ⓑ with autocollimator Ⓒ on optics carrier

By screwing objectives Ⓓ in or out, focus image of luminous cross in reticle plane

Image too low: move objective down

Réglage des objectifs

Hauteur de l'image

- Poser le corps du microscope sur le miroir Ⓐ et poser la plaque Ⓑ et l'autocollimateur Ⓒ sur le corps du microscope.
- Tourner les objectifs Ⓓ dans le sens ↻ ou ↺ jusqu'à ce que la croix lumineuse forme une image nette dans le plan du réticule

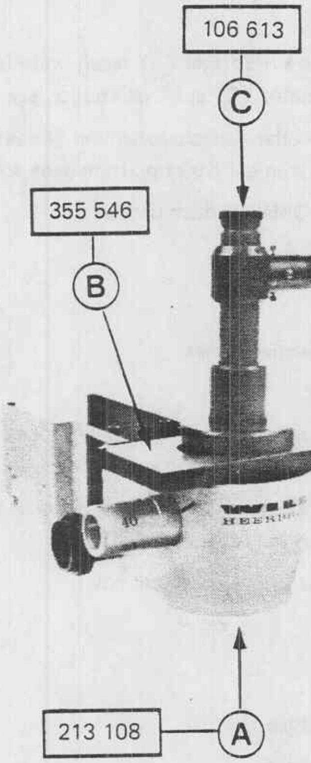
Image trop basse = objectif vers le bas.

Ajuste de los objetivos:

Altura de imagen:

- Colocar el portaópticas en el espejo Ⓐ y colocar la placa Ⓑ y el autocolimador Ⓒ en el poraópticas.
- Girando los objetivos Ⓓ en el sentido ↻ o ↺ , formar una imagen nítida de la cruz luminosa en el plano del retículo.

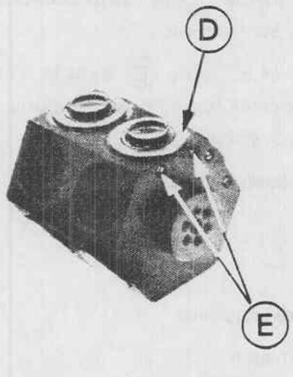
Imagen demasiado baja = objetivo hacia abajo.



Zentrierung:

- Optikträger auf Spiegel Ⓐ legen und Platte Ⓑ mit Autokollimator Ⓒ auf Optikträger legen.
- Durch Verschieben der Objektivfassung Ⓓ mit den 2 Schrauben Ⓔ Leuchtkreuz zur Strichplatte zentrieren.

Toleranz: Das Leuchtkreuz im linken und rechten Strahlengang muss sich mindestens zur Hälfte überdecken. Maximaler gemeinsamer Fehler allseitig 5'.



Centring

Place optics carrier on mirror Ⓐ and place plate Ⓑ with autocollimator Ⓒ on optics carrier

By displacing objective mount Ⓓ , centre luminous cross on reticle by 2 screws Ⓔ

Tolerance: The luminous cross must overlap to at least half its extent in the left and right optical paths; maximum common error in any direction 5'

Centrage

Poser le corps du microscope sur le miroir Ⓐ et poser la plaque Ⓑ et l'autocollimateur sur le corps du microscope.

- Centrer la croix lumineuse par rapport au réticule en déplaçant la monture d'objectif Ⓓ au moyen des 2 vis Ⓔ .

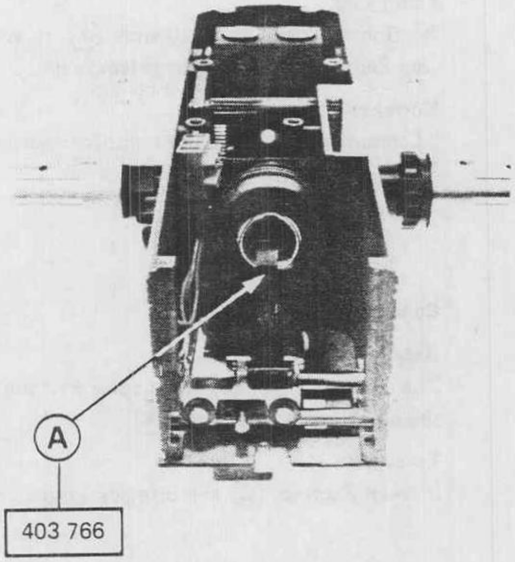
Tolérance: Les croix lumineuses du trajet gauche et du trajet droit doivent se recouvrir au moins jusqu'à la moitié. Erreur commune, max. dans toutes les directions: 5'.

Centraje

Colocar el portaópticas en el espejo Ⓐ y colocar la placa Ⓑ y el autocolimador Ⓒ en el portaópticas.

- Centrar la cruz luminosa en relación al retículo, desplazando la montura de objetivo Ⓓ mediante los 2 tornillos Ⓔ .

Toleráncia: La cruz luminosa del trayecto óptico izquierdo y el trayecto óptico de la derecha deben cubrirse por lo menos hasta la mitad. Error conjunto máx. 5' en todos los sentidos.



Beleuchtung justieren

Lampenanschlag einstellen:

Bedingung:

Der Zentriereinsatz Ⓐ muss in der Ebene der Aufsteckblende Ⓑ scharf abgebildet sein. Kontrolle mit Lupe.

Korrektur:

Zentriereinsatz gegen Anschlag drücken. Durch Loch Exzenterschraube Ⓒ verdrehen.

Adjusting illumination

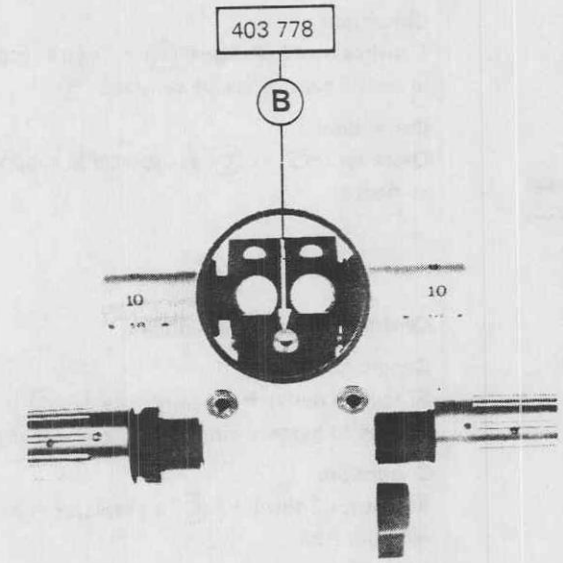
Set lamp stop:

Requirement:

The image of the centring insert Ⓐ must be in sharp focus in the plane of the diaphragm attachment Ⓑ

To adjust:

Press centring insert against stop. Turn eccentric screw Ⓒ through hole.



Réglage de l'éclairage

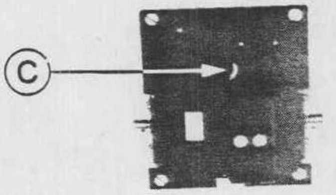
Réglage de la butée de la lampe.

Condition:

La pièce de centrage Ⓐ doit former une image nette dans le plan du diaphragme Ⓑ . Contrôler au moyen d'une loupe.

Correction:

Appuyer la pièce de centrage contre la butée. Régler les vis excentriques Ⓒ au travers du trou



Ajuste de la iluminación.

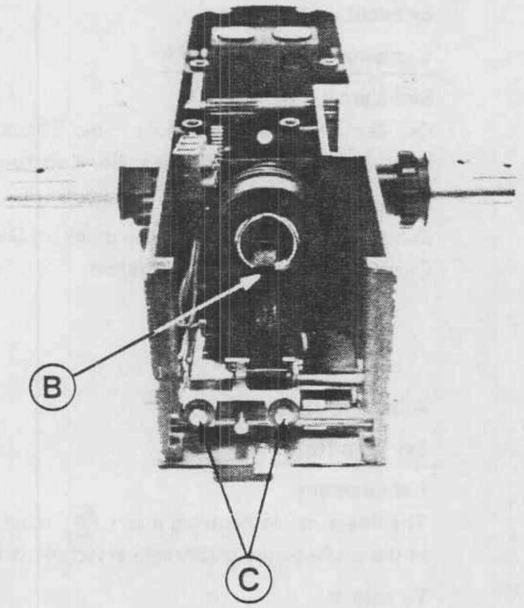
Ajuste del tope de la lámpara:

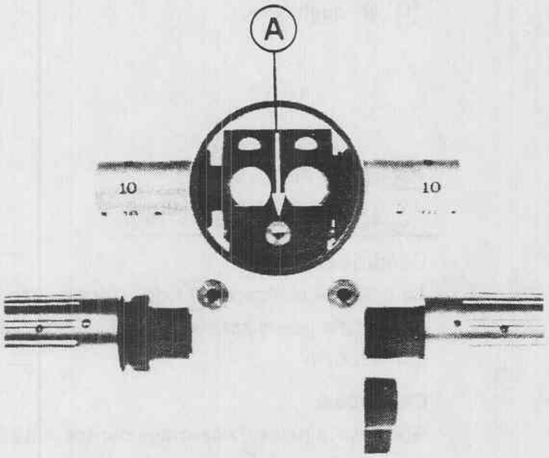
Condición:

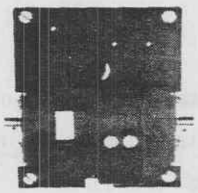
La pieza de centraje Ⓐ debe formar una imagen nítida en el plano del diafragma enchufable Ⓑ . Controlar con una lupa.

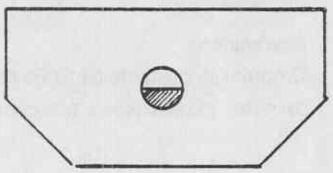
Corrección:

Empujar la pieza de centraje contra el tope. Regular los tornillos excéntricos a través del agujero Ⓒ .









Lampenzentrierung Höhe:

Bedingung:

Die Bohrung der Aufsteckblende Ⓐ muss zur Hälfte vom Zentriereinsatz Ⓑ abgedeckt sein.

Korrektur:

2 Schrauben Ⓒ lösen und Lampenträger in der Höhe verschieben.

Centring lamp vertically:

Requirement:

The centring insert Ⓑ must cover half the opening of the diaphragm attachment Ⓐ

To adjust:

Slacken 2 screws Ⓒ and displace lamp carrier vertically

Centrage de la lampe en hauteur:

Condition:

L'orifice du diaphragme Ⓐ doit être recouvert jusqu'à la moitié par la pièce de centrage Ⓑ .

Correction:

Desserrer les 2 vis Ⓒ et déplacer le support de lampe en hauteur.

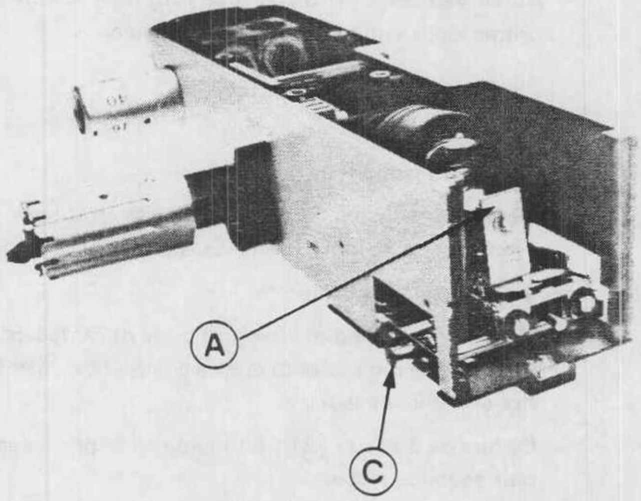
Centraje vertical de la lámpara:

Condición:

El agujero del diafragma enchufable Ⓐ debe ser recubierto hasta la mitad por la pieza de centraje Ⓑ .

Corrección:

Aflojar los 2 tornillos Ⓒ y desplazar el porta-lámpara verticalmente.



Lampenzentrierung Seite:

Bedingung:

Der Glühwendel der Halogenlampe Ⓐ muss seitlich zum Beleuchtungsprisma zentriert sein (beobachten von der Lampenseite).

Korrektur:

Schraube Ⓑ lösen, Mutter Ⓒ festhalten und Anschlag Ⓓ ein- oder ausdrehen.

Hinweis:

Wenn die Lampe unter Spannung ist, wandert der Glühwendel um ca. 0,2mm nach oben und ist darum im kalten Zustand in der Höhe nicht zentriert.

Centring lamp horizontally:

Requirement:

The filament of the halogen lamp Ⓐ must be centred horizontally on the illumination prism (seen from lamp side)

To adjust:

Slacken screw Ⓑ , hold nut Ⓒ and screw stop Ⓓ in or out

Note:

When the lamp is in use, the filament moves about 0.2mm upwards; it is therefore never centred in the cold state

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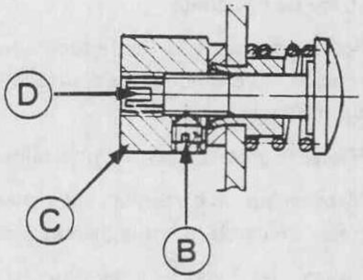


Centrage latéral de la lampe

Condition:

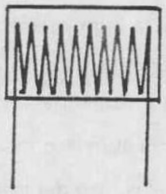
Le filament de la lampe aux halogènes doit être centré latéralment par rapport aux prisme d'éclairage (Vu du côté de la lampe).

Correction:

Desserrer la vis Ⓑ , maintenir l'écrou Ⓒ et tourner la butée Ⓓ dans le sens ↻ ou ↺.

Remarque:

Si la lampe est mise sous tension le filament se déplace d'env. 0,2mm vers le haut et n'est donc pas centré en hauteur lorsqu'il est froid.



Centraje lateral de la lámpara:

Condición:

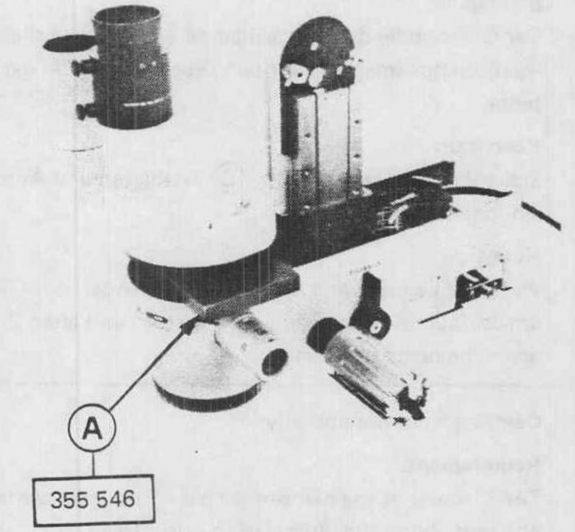
El filamento de la lámpara de halógeno Ⓐ debe estar centrado lateralmente en relación al prisma de iluminación. (visto desde el lado de la lámpara)

Correccion:

Aflojar el tornillo Ⓑ , fijar la tuerca Ⓒ y girar el tope Ⓓ en el sentido ↻ o ↺.

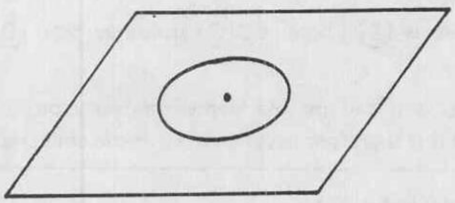
Indicación:

Si la lámpara es puesta bajo tensión, el filamento se desplaza aprox. 0,2mm hacia arriba. Por tal razón no es centrado verticalmente cuando la lámpara está fría.



Beleuchtung zentrieren.

- Platte Ⓐ, Binokulartubus mit Fadenkreuz- oder Autokollimationsokular auf Optikträger legen.
- Kleinste Vergrösserung einstellen.
- Auf Karton Gesichtsfeldzentrum markieren und mit Zirkel Kreis zeichnen.
  Durchmesser = Grösse des Leuchtflecks.
- Durch Verdrehen der 3 Schrauben Ⓑ Beleuchtungsprisma kippen und Leuchtfleck zentrieren.

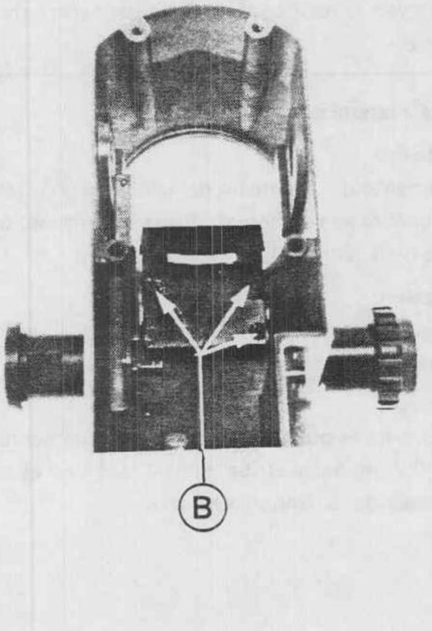


Centring illumination

- Place plate Ⓐ and binocular tube with cross-hairs eyepiece or autocollimation eyepiece on optics carrier.
- Set lowest magnification
- Mark centre of field of view on a piece of cardboard and use a pair of compasses to draw a circle whose diameter= size of luminous spot
- By turning 3 screws Ⓑ, tilt illumination prism and centre luminous spot

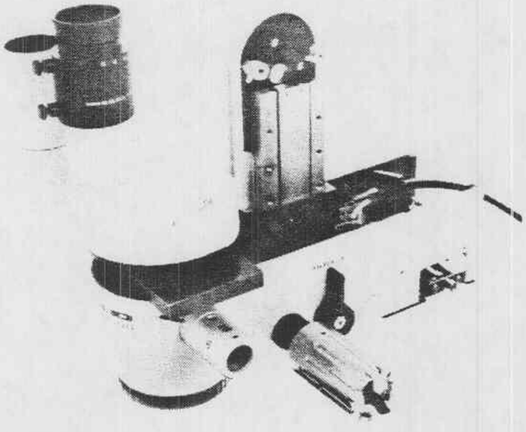
Centrage de l'éclairage:

- Poser la plaque Ⓐ, et le tube binoculaire muni d'un réticule, ou d'un oculaire d'autocollimation sur le corps du microscope
- Régler le grossissement le plus faible
- Marquer sur un carton le centre du champ visuel et tracer un cercle ayant le diamètre de la tache lumineuse.
- Tourner les 3 vis Ⓑ pour basculer le prisme d'éclairage et centrer la tache lumineuse.



Centraje de la iluminación

- Colocar la placa Ⓐ y un tubo binocular con ocular de retículo o ocular de autocolimación en el portaópticas.
- Regular el aumento mas debil
- Marcar el centro del campo visual en un cartón y dibujar un círculo del diámetro de la mancha luminosa.
- Regulando los 3 tornillos Ⓑ, bascular el prisma de iluminación para centrar la mancha luminosa.



Ausleuchtung kontrollieren.

- Hellgrauen Karton scharfstellen.
- Es dürfen keine ausgeprägte, gelbliche Randpartien oder blaue Flecken auftreten.

Check evenness of illumination

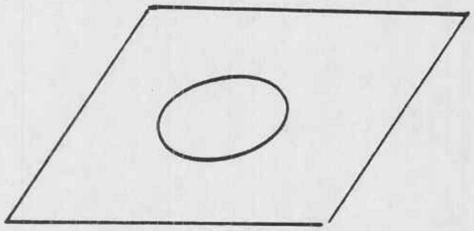
Focus on light grey cardboard: no distinctly yellowish edge portions or blue spots must be visible.

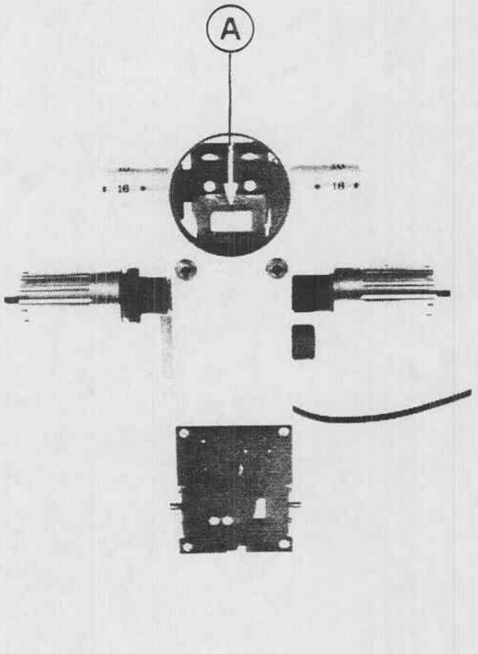
Contrôler l'uniformité de l'éclairage

- Focaliser sur un carton gris-clair
- Les bords ne doivent pas être jaunâtres et le champ visuel ne doit pas présenter de taches bleues.

Control de la iluminación.

- Enfocar un cartón gris-claro.
- Los bordes no deben estar amarillentos y el campo visual no debe mostrar manchas azules.





Lampenzentrierung kontrollieren.

- Seidenpapier Ⓐ auf Beleuchtungsprisma legen.
- Abbildung des Glühwendels muss zum Prisma zentriert sein.

Check centring of lamp

Place tissue paper Ⓐ on illumination prism:
the image of the filament must be centred on the prism

Contrôle du centrage de la lampe

- Poser un papier de soie Ⓐ sur le prisme d'éclairage.
- L'image du filament doit être centrée par rapport au prisme.

Control del centraje de la lámpara.

- Poner un papel de seda Ⓐ en el prisma de iluminación.
- La imagen del filamento debe estar centrado en relación al prisma.

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CONTROL UNIT 182 495

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280 874	1
302 901	6
313 651	6
317 083	1
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349 674	1,2,4
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378 001	7
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379 729	2
383 662	6
383 690	6
388 301	6
388 301	1
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412 798	6
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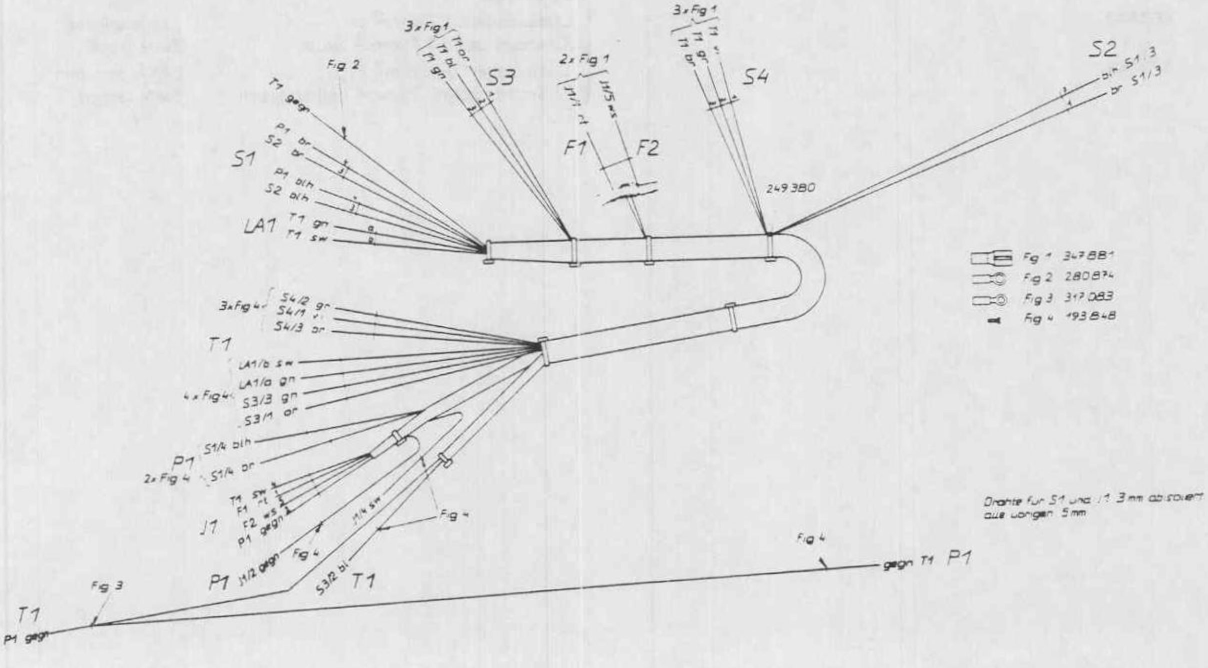
388301				**Kabelbaum** **Cable harness** bestehend aus: consisting of:	*nicht lieferbar* *delivery not possible*
166138				Litze isoliert 0,75mm^2 br Stranded cable 0,75mm^2 brown	*Länge angeben* *State length*
166139				Litze isoliert 0,75mm^2 rt Stranded cable 0,75mm^2 red	*Länge angeben* *State length*
166140				Litze isoliert 0,75mm^2 or Stranded cable 0,75mm^2 orange	*Länge angeben* *State length*
166142				Litze isoliert 0,75mm^2 gn Stranded cable 0,75mm^2 green	*Länge angeben* *State length*
166143				Litze isoliert 0,75mm^2 bl Stranded cable 0,75mm^2 blue	*Länge angeben* *State length*
166144				Litze isoliert 0,75mm^2 ws Stranded cable 0,75mm^2 white	*Länge angeben* *State length*
166145				Litze isoliert 0,75mm^2 sw Stranded cable 0,75mm^2 black	*Länge angeben* *State length*
166453				Litze isoliert 0,75mm^2 gr Stranded cable 0,75mm^2 grey	*Länge angeben* *State length*
193848		72855	74054	Kabelendhülse Cable end head	
249380				Kabelbinder Cable tie	
280874				Kabelschuh Cable shoe	
317083				Kabelschuh Cable shoe	
347881				Steckhülse Contact bush	
349674				Litze isoliert 0,75mm^2 blh Stranded cable 0,75mm^2 light-blue	*Länge angeben* *State length*
800440				Litze isoliert 0,75mm^2 vi Stranded cable 0,75mm^2 violet	*Länge angeben* *State length*
800445				Litze isoliert 0,75mm^2 gegn Stranded cable 0,75mm^2 yellow-green	*Länge angeben* *State length*


3×Fig 1
T1 or
T1 bl
T1 gn
S3
Fig 2
T1 gegn
P1 br
S2 br
S1
P1 blh
S2 blh
LA1
T1 gn
T1 sw
2× Fig 1
J1/1 rt
J1/5 ws
F1
F2
3×Fig 1
T1 vi
T1 gr
T1 br
S4
249 380
S2
blh S1/3
br S1/3
3×Fig 4
S4/2 gr
S4/1 vi
S4/3 br
T1
LA1/b sw
LA1/a gn
4×Fig 4
S3/3 gn
S3/1 or
S1/4 blh
P1
2×Fig 4
S1/4 br
T1 sw
F1 rt
F2 ws
P1 gegn
J1
J1/4 sw
Fig 4
Fig 4
P1
J1/2 gegn
S3/2 bl
T1
Fig 3
T1
P1 gegn
Fig 4
gegn T1
P1
Fig 1 347881
Fig 2 280874
Fig 3 317083
Fig 4 193848
Drähte für S1 und J1 3 mm abisoliert
alle übrigen 5 mm

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Artikel-Nr.	auf Zeichnung	gültig für Instr.-Nr.		Benennung / *Bemerkungen*	
		von	bis		
Stock no.	drawing no.	valid f. instrument no.		description / *remarks*	
		from	to		
414945				**Verdrahtung vorbereitet** **Wiring** bestehend aus: consisting of:	
166138				Litze isoliert 0,75mm² br Stranded cable 0,75mm² brown	*Länge angeben* *State length*
166139				Litze isoliert 0,75mm² rt Stranded cable 0,75mm² red	*Länge angeben* *State length*
166140				Litze isoliert 0,75mm² or Stranded cable 0,75mm² orange	*Länge angeben* *State length*
166142				Litze isoliert 0,75mm² gn Stranded cable 0,75mm² green	*Länge angeben* *State length*
166143				Litze isoliert 0,75mm² bl Stranded cable 0,75mm² blue	*Länge angeben* *State length*
166144				Litze isoliert 0,75mm² ws Stranded cable 0,75mm² white	*Länge angeben* *State length*
166145				Litze isoliert 0,75mm² sw Stranded cable 0,75mm² black	*Länge angeben* *State length*
166453				Litze isoliert 0,75mm² gr Stranded cable 0,75mm² grey	*Länge angeben* *State length*
167456				Kabelschuh Cable shoe	
189191		79255	79904	Isolierschrumpfschlauch Shrink tube	
193848				Kabelendhülse Cable end head	
249380				Kabelbinder Cable tie	
347881	414944			Steckhülse Contact bush	
349674				Litze isoliert 0,75mm² blh Stranded cable 0,75mm² light-blue	*Länge angeben* *State length*
379729				Kabelschuh Cable shoe	
393170				Kabelschuh Cable shoe	
800440				Litze isoliert 0,75mm² vi Stranded cable 0,75mm² violet	*Länge angeben* *State length*
800445				Litze isoliert 0,75mm² gegn Stranded cable 0,75mm² yellow-green	*Länge angeben* *State length*

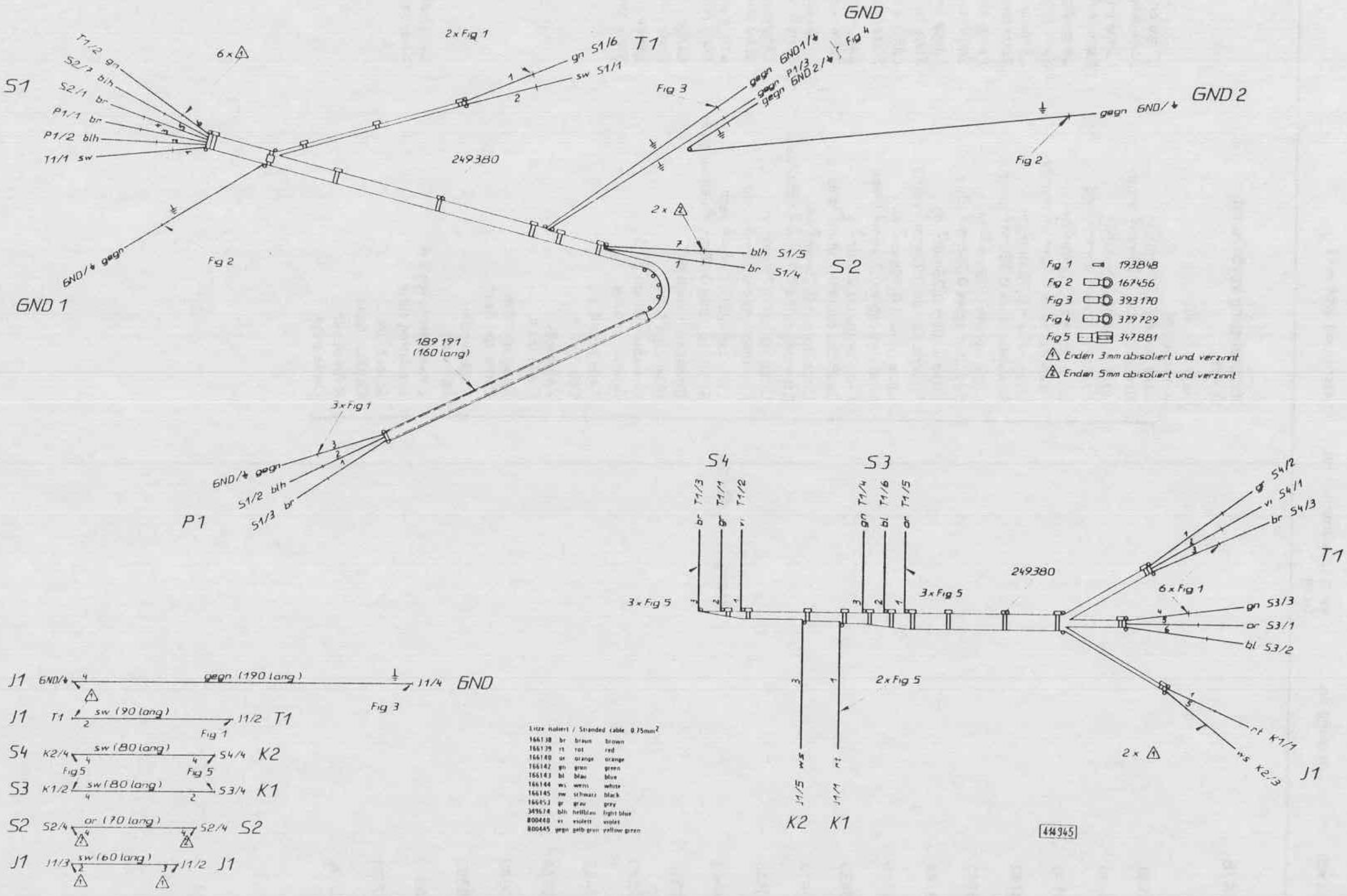

S1
T1/2 gn
S2/3 blh
S2/1 br
P1/1 br
P1/2 blh
T1/1 sw
6 x ⚠1
2 x Fig 1
gn S1/6 T1
sw S1/1
1
2
249380
GND 1
GND/4 gegn
Fig 2
GND
gegn GND1/4
gegn P1/3
gegn GND2/4
Fig 4
Fig 3
GND 2
gegn GND/4
Fig 2
2 x ⚠2
blh S1/5
br S1/4
S2
189 191
(160 lang)
3 x Fig 1
GND/4 gegn
S1/2 blh
S1/3 br
P1
S4
S3
br T1/3
gr T1/1
vi T1/2
gn T1/4
bl T1/6
or T1/5
3 x Fig 5
3 x Fig 5
249380
T1
gr S4/2
vi S4/1
br S4/3
6 x Fig 1
gn S3/3
or S3/1
bl S3/2
2 x Fig 5
rt K1/1
ws K2/3
J1
2 x ⚠1
ws J1/5
rt J1/1
K2
K1
444945
J1 GND/4 gegn (190 lang) J1/4 GND
Fig 3
J1 T1 sw (90 lang) J1/2 T1
Fig 1
S4 K2/4 sw (80 lang) S4/4 K2
Fig 5
Fig 5
S3 K1/2 sw (80 lang) S3/4 K1
S2 S2/4 or (70 lang) S2/4 S2
J1 J1/3 sw (60 lang) J1/2 J1

Fig 1 193848
Fig 2 167456
Fig 3 393170
Fig 4 379729
Fig 5 347881
⚠1 Enden 3mm abisoliert und verzinnt
⚠2 Enden 5mm abisoliert und verzinnt

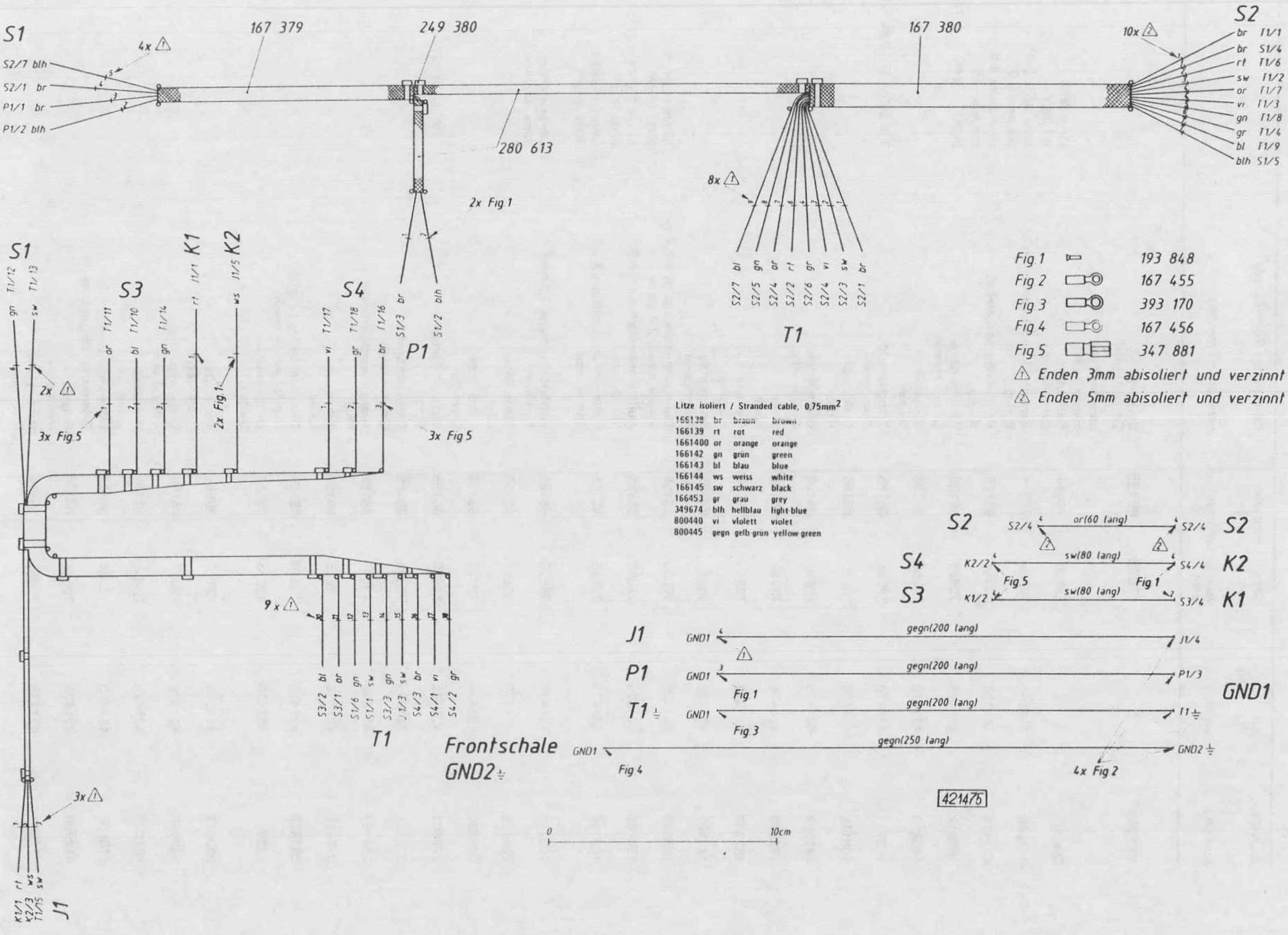
Litze isoliert / Stranded cable 0.75mm²

166138	br	braun	brown
166139	rt	rot	red
166140	or	orange	orange
166142	gn	grün	green
166143	bl	blau	blue
166144	ws	weiss	white
166145	sw	schwarz	black
166453	gr	grau	grey
349674	blh	hellblau	light blue
800440	vi	violett	violet
800445	gegn	gelb grün	yellow green

MTR29 STEUERGERÄT 182495
MTR29 CONTROL UNIT 182495

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
421475				**Verdrahtung vorbereitet** **Wiring**	
				bestehend aus: consisting of:	
166138				Litze isoliert 0,75mm^2 br Stranded cable 0,75mm^2 brown	*Länge angeben* *State length*
166139				Litze isoliert 0,75mm^2 rt Stranded cable 0,75mm^2 red	*Länge angeben* *State length*
166140				Litze isoliert 0,75mm^2 or Stranded cable 0,75mm^2 orange	*Länge angeben* *State length*
166142				Litze isoliert 0,75mm^2 gn Stranded cable 0,75mm^2 green	*Länge angeben* *State length*
166143				Litze isoliert 0,75mm^2 bl Stranded cable 0,75mm^2 blue	*Länge angeben* *State length*
166144				Litze isoliert 0,75mm^2 ws Stranded cable 0,75mm^2 white	*Länge angeben* *State length*
166145				Litze isoliert 0,75mm^2 sw Stranded cable 0,75mm^2 black	*Länge angeben* *State length*
166453				Litze isoliert 0,75mm^2 gr Stranded cable 0,75mm^2 grey	*Länge angeben* *State length*
349674				Litze isoliert 0,75mm^2 blh Stranded cable 0,75mm^2 light-blue	*Länge angeben* *State length*
800440				Litze isoliert 0,75mm^2 vi Stranded cable 0,75mm^2 violet	*Länge angeben* *State length*
800445		84856	85155	Litze isoliert 0,75mm^2 gegn Stranded cable 0,75mm^2 yellow-green	*Länge angeben* *State length*
167379				Gewebeschlauch ø 6 Insulating tube	*Länge angeben* *State length*
167380				Gewebeschlauch ø 10 Insulating tube	*Länge angeben* *State length*
167455				Kabelschuh Cable shoe	
167456				Kabelschuh Cable shoe	
193848				Kabelendhülse Cable end head	
249380				Kabelbinder Cable tie	
280613				Gewebeschlauch ø 4 Insulating tube	*Länge angeben* *State length*
347881				Steckhülse Contact bush	
393170				Kabelschuh Cable shoe	

MTR29 STEUERGERÄT 182495
MTR29 CONTROL UNIT 182495


S1
S2/7 blh
S2/1 br
P1/1 br
P1/2 blh
4x △1
167 379
249 380
280 613
167 380
10x △2
S2
br T1/1
br S1/4
rt T1/6
sw T1/2
or T1/7
vi T1/3
gn T1/8
gr T1/4
bl T1/9
blh S1/5
2x Fig.1
P1
S1/3 br
S1/2 blh
8x △1
S2/7 bl
S2/5 gn
S2/4 or
S2/2 rt
S2/6 gr
S2/4 vi
S2/3 sw
S2/1 br
T1
S1
gn T1/12
sw T1/13
2x △1
3x Fig.5
S3
or T1/11
bl T1/10
gn T1/14
K1
rt J1/1
K2
ws J1/5
2x Fig.1
S4
vi T1/17
gr T1/18
br T1/16
3x Fig.5
9 x △1
S3/2 bl
S3/1 or
S1/6 gn
S1/1 sw
S3/3 gn
J1/3 sw
S4/3 br
S4/1 vi
S4/2 gr
T1
3x △1
K1/1 rt
K2/3 ws
T1/15 sw
J1
S2
S2/4
or(60 lang)
S2/4
S2
△2
△2
S4
K2/2
sw(80 lang)
S4/4
K2
Fig 5
Fig 1
S3
K1/2
sw(80 lang)
S3/4
K1
J1
GND1
gegn(200 lang)
J1/4
△1
P1
GND1
gegn(200 lang)
P1/3
Fig 1
GND1
T1 ⏚
GND1
gegn(200 lang)
T1 ⏚
Fig 3
Frontschale
GND2 ⏚
GND1
gegn(250 lang)
GND2 ⏚
Fig 4
4x Fig 2
421475
0
10cm

Litze isoliert / Stranded cable, 0,75mm²

166138	br	braun	brown
166139	rt	rot	red
1661400	or	orange	orange
166142	gn	grün	green
166143	bl	blau	blue
166144	ws	weiss	white
166145	sw	schwarz	black
166453	gr	grau	grey
349674	blh	hellblau	light-blue
800440	vi	violett	violet
800445	gegn	gelb-grün	yellow-green

Fig. 1	193 848
Fig. 2	167 455
Fig. 3	393 170
Fig. 4	167 456
Fig. 5	347 881

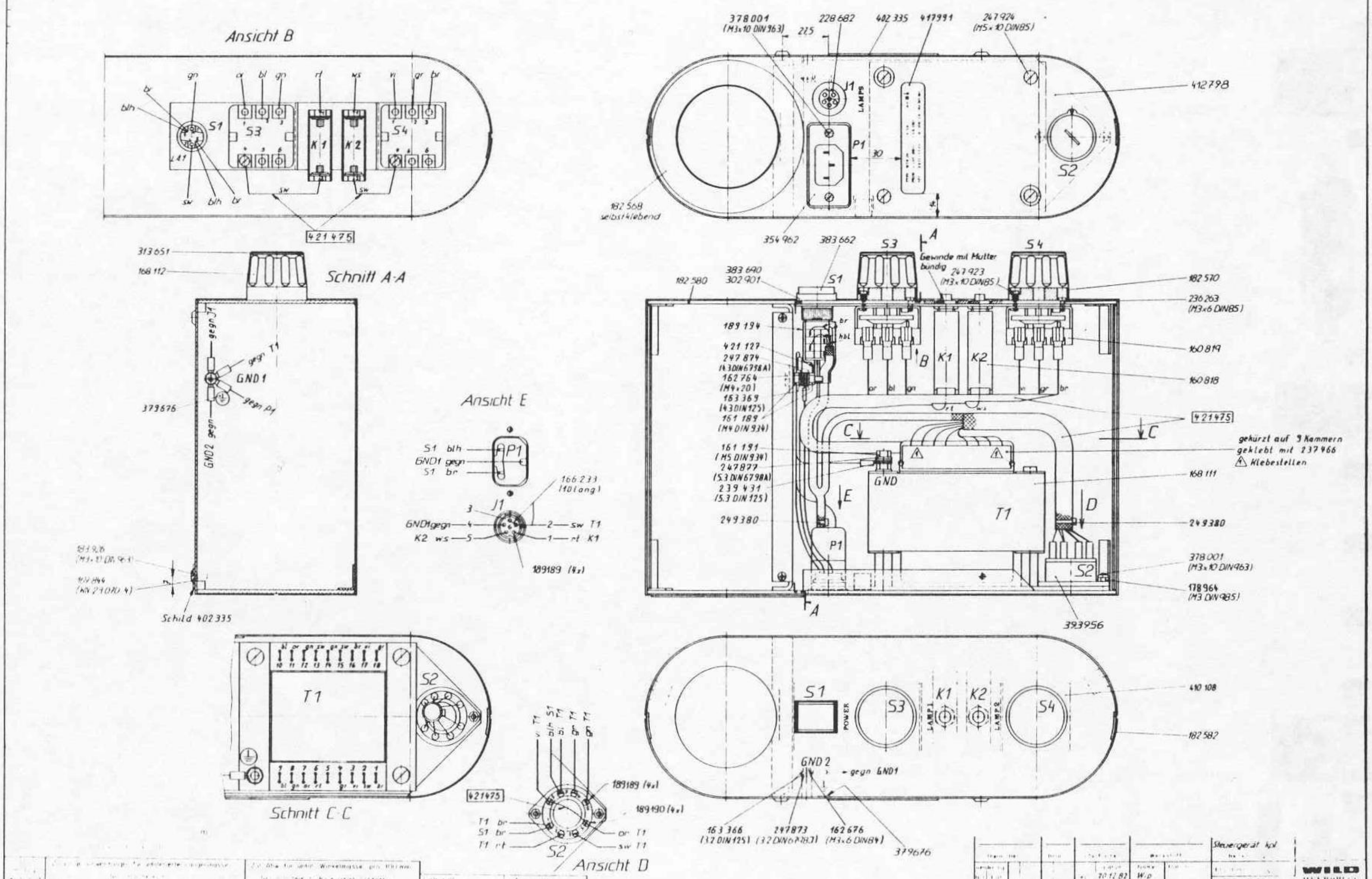
△1 Enden 3mm abisoliert und verzinnt

△2 Enden 5mm abisoliert und verzinnt

MTR29 STEUERGERÄT 182495
MTR29 CONTROL UNIT 182495

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
182495		**72855**	**85155**	**Steuergerät** **Control unit**	
				bestehend aus: consisting of:	
388301		72855	74054	Kabelbaum Cable harness	*siehe Seite 1* *see page 1*
414945	414944	79255	79904	Verdrahtung vorbereitet Wiring	*siehe Seite 2-3* *see page 2-3*
421475	421476	84856	85155	Verdrahtung vorbereitet Wiring	*siehe Seite 4-5* *see page 4-5*
160818	421476	72855	85155	Schutzschalter Circuit breaker	240V 24V 7A
160819	421476	72855	85155	Drehschalter Switch	
168111	421476	72855	85155	Transformator Transformer	110-260V 12-16,8V * *siehe Seite 7* *see page 7*
168112	421476	72855	85155	Drehknopf Knob	
182568	421476	72855	85155	Gleitscheibe Gliding disk	
182570	421476	72855	85155	Skala Scale	
182580	421476	72855	85155	Gehäuse Housing	
182582	421476	72855	85155	Frontschale Front panel	
185306	421476	79605	85155	Isolierschrumpfschlauch ϕ 2,4 sw Shrink tube ϕ 2.4 black	*Länge angeben* *State length*
189189	421476	72855	85155	Isolierschrumpfschlauch ϕ 3,2 Shrink tube	*Länge angeben* *State length*
189190	421476	72855	85155	Isolierschrumpfschlauch ϕ 4,7 Shrink tube	*Länge angeben* *State length*
166233	421476	79605	85155	Kupferdraht blank 0,5mm^2 Bare wire	*Länge angeben* *State length*
228682	421476	72855	85155	Flanschdose Plug	
249380	421476	72855	85155	Kabelbinder Cable tie	
302901	421476	72855	85155	Signalglühlampe Bulb	14V 1,12W
313651	421476	72855	85155	Drehknopfdeckel Cap for knob	
354962	421476	72855	85155	Apparatesteckverbinder Plug	
379676	421476	72855	85155	Schild Label	
383662	421476	72855	85155	Druckschalterhaube grün Cap for switch green	
383690	421476	72855	85155	Druckschalter Switch	
393517	414944	72855	79554	Kabeltülle Cable sleeve	
393956	421476	72855	85155	Spannungswähler Voltage selector	
402335	421476	72855	85155	Warnschild Label	
410108	421476	72855	85155	Sicherungshalter Support for circuit breaker	
412798	421476	72855	85155	Netzplatte Mains plate	
417991	421476	72855	85155	Datenschild Data plate	

Passmass	Abmasse	Zul Abw f unfol Plan - Rundlauf u/od Symmetrie							
		/	0.5	0.2	0.1	≡	0.5	0.3	0.15



Ansicht B
gn
br
blh
S1
L41
or bl gn
S3
rt
K1
ws
K2
vi gr br
S4
sw blh br
sw
sw
421 475
378 001
(M3x10 DIN963)
22.5
228 682
402 335
417991
247 924
(M5x10 DIN85)
J1
LAMPS
P1
30
412798
S2
182 568
selbstklebend
354 962
383 662
S3
A
Gewinde mit Mutter bundig
247 923
(M3x10 DIN85)
S4
182 570
236 263
(M3x6 DIN85)
182 580
383 690
302 901
S1
189 194
br
hbl
421 127
247 874
(4.3 DIN6798A)
162 764
(M4x20)
163 369
(4.3 DIN125)
161 189
(M4 DIN934)
B
K1
K2
160 819
160 818
or bl gn
vi gr br
rt ws
421475
C
C
gekürzt auf 9 Kammern
geklebt mit 237 466
⚠ Klebestellen
161 191
(M5 DIN934)
247877
(5.3 DIN6798A)
239 431
(5.3 DIN 125)
GND
E
168 111
T1
D
249380
249 380
P1
S2
378 001
(M3x10 DIN963)
178 964
(M3 DIN985)
A
393956
313 651
168 112
Schnitt A-A
gegn J1
gegn T1
GND1
gegn P1
379676
GND2 gegn
183 926
(M3x10 DIN963)
187 844
(KN 21070.4)
Schild 402 335
Ansicht E
S1 blh
GND1 gegn
S1 br
P1
166 233
(10 lang)
3
J1
GND1gegn — 4
K2 ws — 5
2 — sw T1
1 — rt K1
189189 (4x)
bl or gn sw gn sw br vi gr
10 11 12 13 14 15 16 17 18
T1
S2
9 8 7 6 5 4 3 2 1
bl gn or rt gr vi sw br
Schnitt C-C
vi T1
blh S1
bl T1
gr T1
gn T1
189189 (4x)
421475
189190 (4x)
T1 br
S1 br
T1 rt
or T1
sw T1
S2
Ansicht D
S1
POWER
S3
LAMP 1
K1
K2
LAMP 2
S4
410 108
182 582
GND 2
gegn GND1
163 366
(3.2 DIN125)
247873
(3.2 DIN6798J)
162 676
(M3x6 DIN84)
379676

Steuergerät kpl

20.12.82 Wip

21.12.82

MTR 29

414 341

421 476

WILD

WILD
HEERBRUGG

ERSATZTEILKATALOG

SPARE PARTS CATALOGUE

M600

STATIVE
STANDS

3696 Ws/häf

TEILNUMMERN-VERZEICHNIS FUER STATIVE
PARTS LIST FOR STANDS

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182 507	MSV57
182 508	MSV59
182 526	MSV56
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389 160	MSV66
408 477	MSV72
422 473	MSV79
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422 476	MSV81
422 477	MSV82
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429 788	MSV88

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MSV56	Schwenkgelenk 182 526 Tiltable joint 182 526
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MSV58	Mikroskopträger neigbar für M610, M630, M650 182 506 Microscope carrie for M610, M630, M650 182 506
MSV59	Mikroskopträger neigbar mit Trieb für M610, M630, M650 182 508 Microscope carrier with drive for M610, M630, M650 182 508
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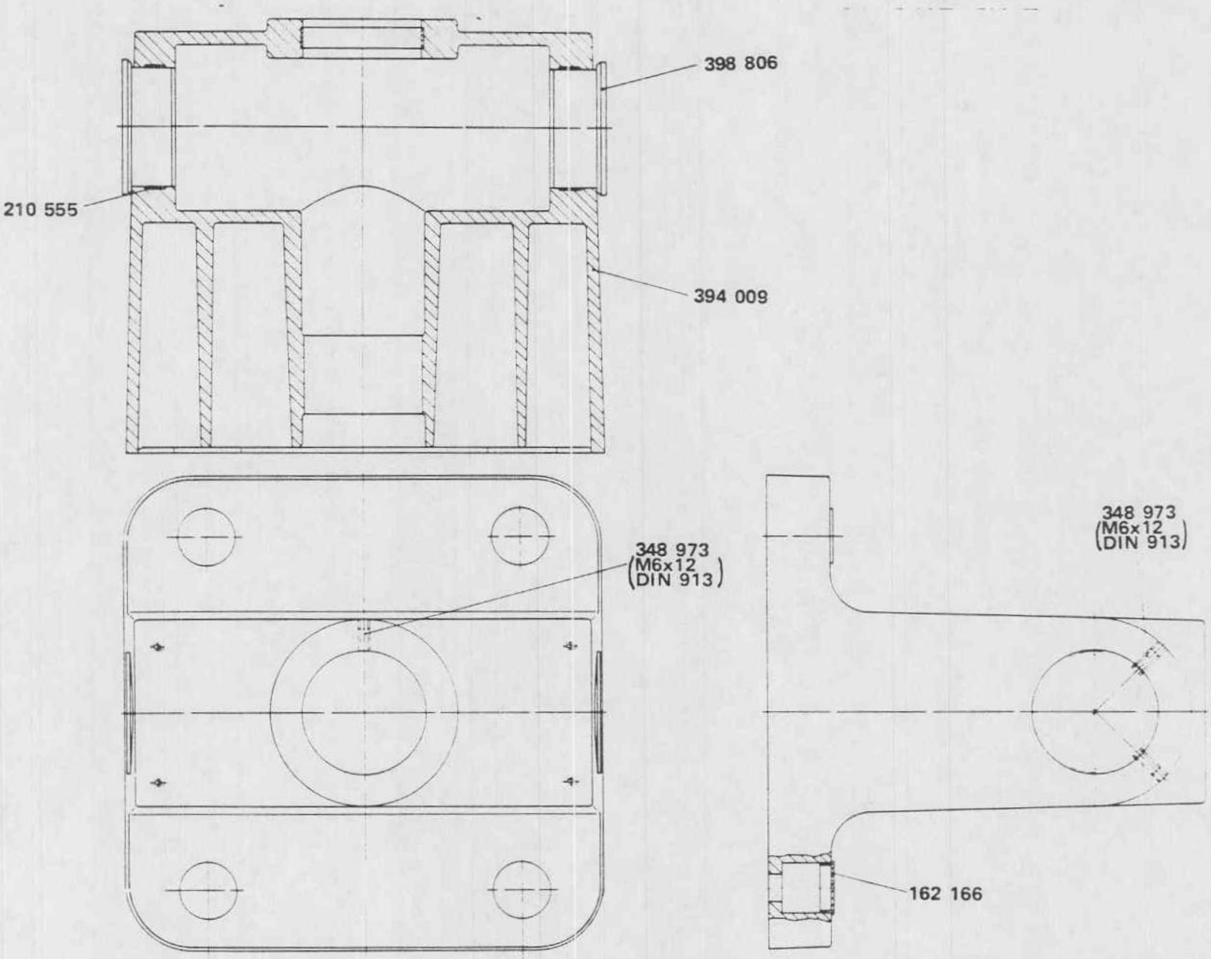
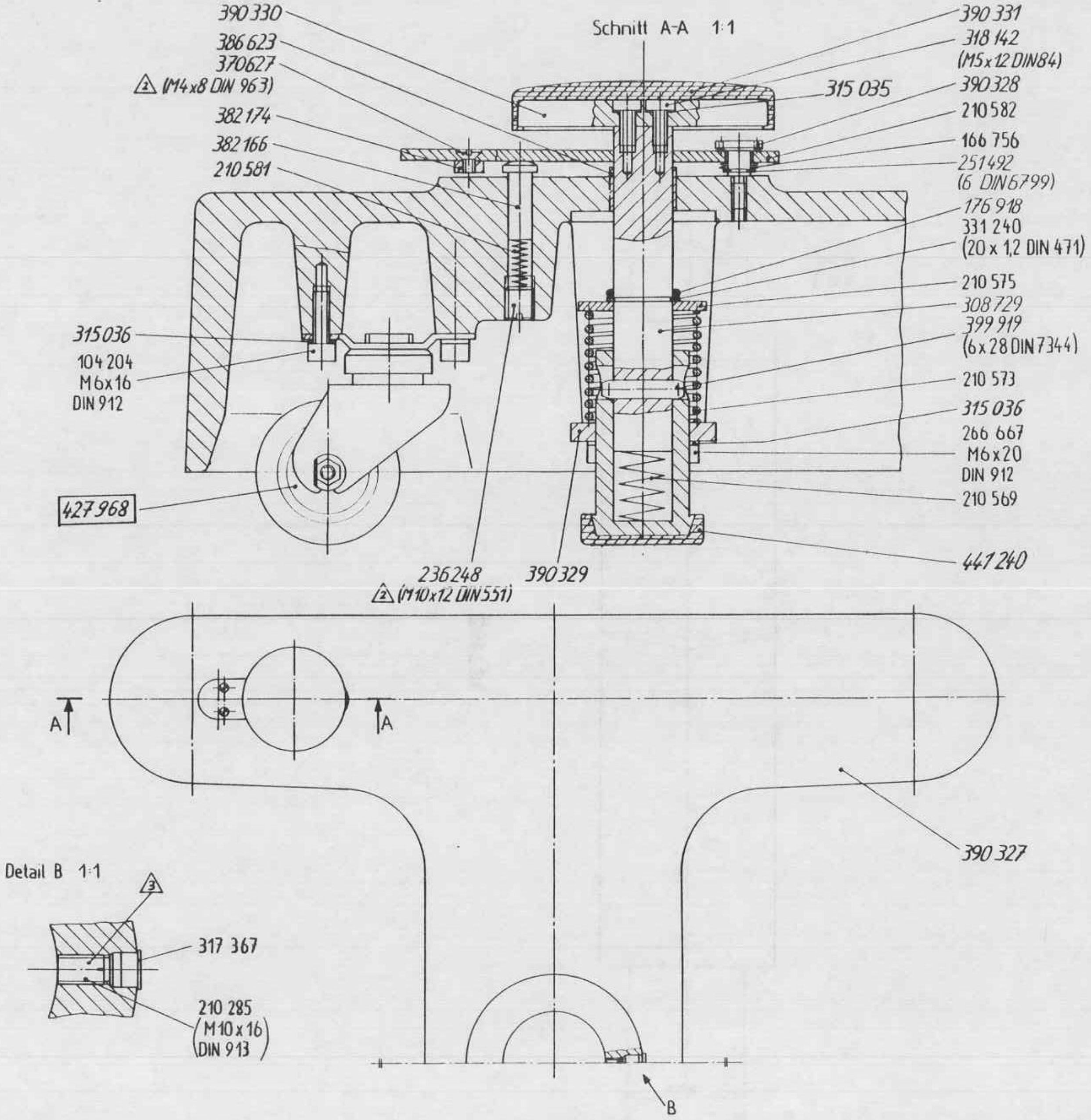
MSV81	Schwenkarm M650 422 476 Swing arm M650 422 476
MSV82	Schwenkarm M690 422 477 Swing arm M690 422 477
MSV88	XY-Kupplung mit Mikroskopträger M690 429 785, 429 786, 429 788 XY-Unit with microscope carrier M690 429 785, 429 786, 429 788

MSV49 Konsole 182 491
MSV49 Mounting bracket 182 491

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks	Zeichnung drawing
182 491	**Konsole** **Mounting bracket**	
162 166	Abdecklampe Cover	
210 555	Klemmband Clamping band	
394 009	Konsole Mounting bracket	
398 806	Schutzkappe Cover	
348 973	Gew. Stift M6x12 Set screw	


398 806
210 555
394 009
348 973 (M6x12 DIN 913)
348 973 (M6x12 DIN 913)
162 166

MSV51 FUSS FAHRBAR MS–C 182499
MSV51 BASE ROLLABLE MS–C 182499


Schnitt A-A 1:1
390 330
386 623
370627
2 (M4x8 DIN 963)
382 174
382 166
210 581
315 036
104 204
M6x16
DIN 912
427 968
236 248
2 (M10x12 DIN 551)
390 329
390 331
318 142
(M5x12 DIN 84)
315 035
390 328
210 582
166 756
251492
(6 DIN 6799)
176 918
331 240
(20 x 1,2 DIN 471)
210 575
308 729
399 919
(6x28 DIN 7344)
210 573
315 036
266 667
M6x20
DIN 912
210 569
441 240
A
A
390 327
Detail B 1:1
3
317 367
210 285
(M10x16
DIN 913)
B

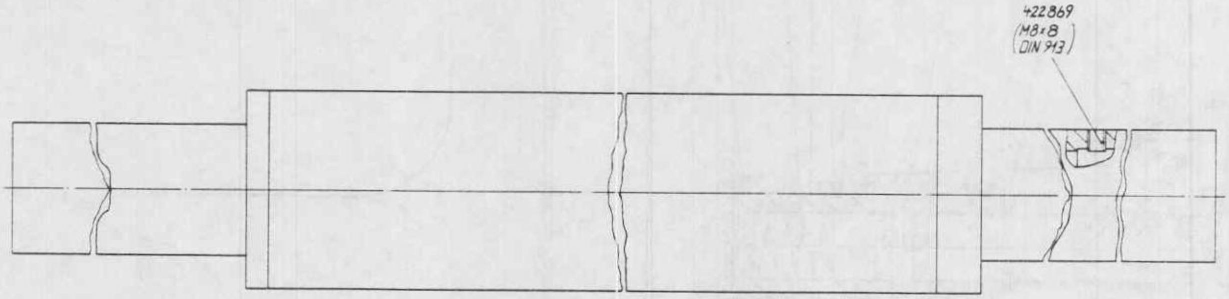
2 mit Schellack 197 866 gesichert

3 gefettet mit 128 406 (V3m)

September 1985

MSV 50 Säule MS–B 182492
MSV 50 Column MS–B 182492

Artikel-Nr.	auf Zeichnung	gültig für Instr.-Nr. von	bis	Benennung / *Bemerkungen*
Stock no.	drawing no.	valid f. instrument no. from	to	description / *remarks*
182492				**SÄULE MS–B** **COLUMN MS–B** Keine Einzelteile lieferbar mit Ausnahme von: No separate parts aviable except for
422869				Gew. Stift M8x8 Set Screw



182492

Dezember 1982

MSV 51 Fuss fahrbar MS–C 182499
MSV 51 Base, rollable MS–C 182499

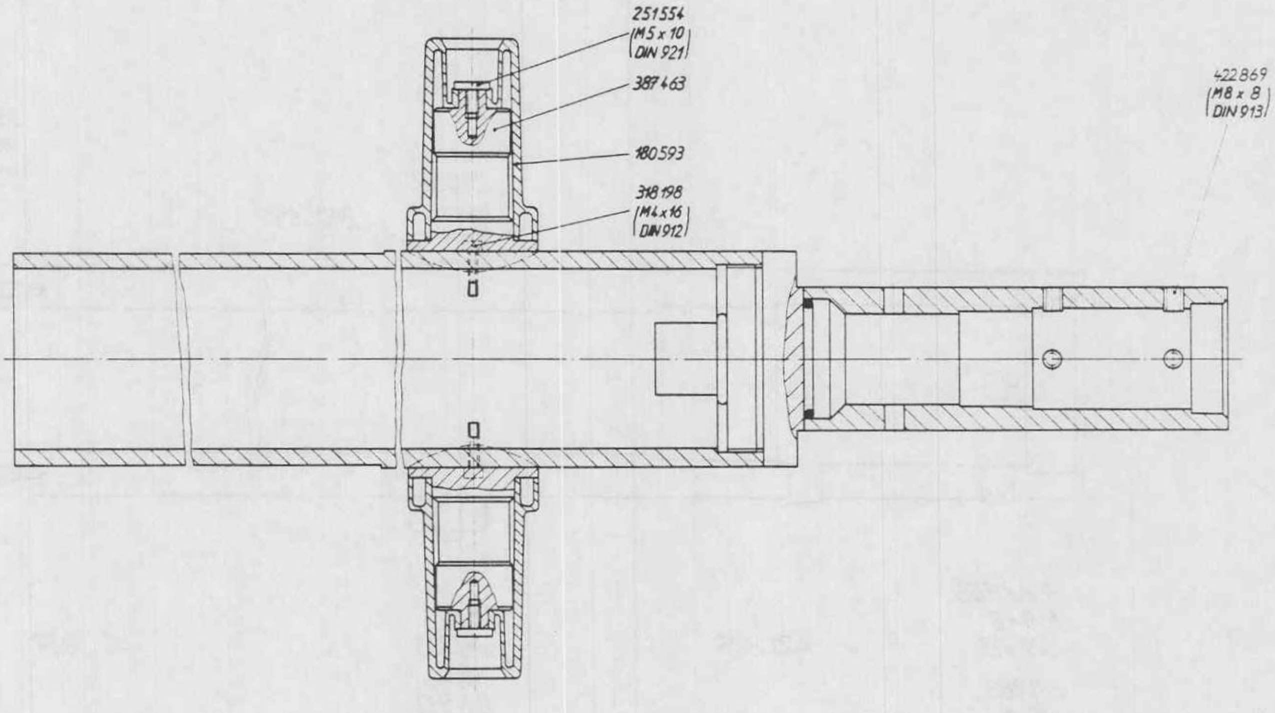
Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
182499				**FUSS FAHRBAR MS–C** **BASE, ROLLABLE MS–C** bestehend aus: consisting of:	
176918				0-Ring 0-Ring	
210569				Druckfeder Spring	
210573				Druckfeder Spring	
210575				Scheibe Disk	
210581				Druckfeder Spring	
210582				Raste Catch	
308729				Stössel Shaft	
315035				Sicherungsscheibe Locking washer	
315036				Sicherungsscheibe Locking washer	
317367				Deckel Cover	
382166				Puffer Buffer	
382714				Steg Bar	
386623				Büchse Bush	
390327				Fuss Base	
390328				Schraube Screw	
390329				Platte Plate	
390330				Scheibe Disk	
390331				Kappe Cover	
427968				Doppellenkrolle Swivel roll	*Keine Einzelteile lieferbar* *No seperate parts aviable*
441240				Fussbremse Foot brake	
104204				Schraube M2x16 Screw	
166756				Tellerfeder ⌀ 8,2 Cup spring	
210285				Gew. Stift M10x16 Set screw	
236248				Gew. Stift M10x12 Set screw	
251492				Sicherungsscheibe ⌀ 6 Retaining ring	
266667				Schraube M6x20 Screw	
318142				Schraube M5x12 Screw	
331240				Sicherungsring ⌀ 20 Retaining ring	

MSV 51 Fuss fahrbar MS–C 182499
MSV 51 Base, rollable MS–C 182499

Artikel-Nr.	auf Zeichnung	gültig für Instr.-Nr. von	bis	Benennung / *Bemerkungen*
Stock no.	drawing no.	valid f. instrument no. from	to	description / *remarks*
370627				Schraube M4x8 Screw
339919				Spannstift ø 6x28 Pin

MSV 52 Säule MS–C 181211
MSV 52 Column MS–C 181211

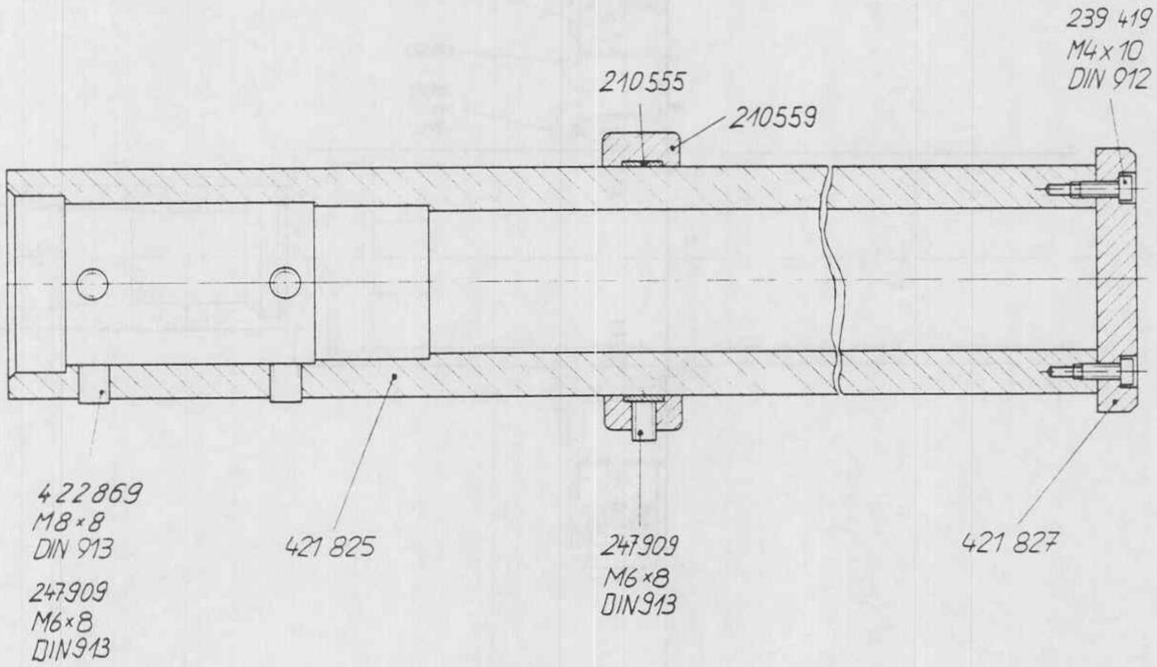
Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von bis valid f. instrument no. from to	Benennung / *Bemerkungen* description / *remarks*
181211			**SÄULE MS–C** **COLUMN MS–C** Keine Einzelteile lieferbar mit Ausnahme von No seperate parts aviable except for:
180593			Positioniergriff Handle
387463			Flansch Flange
251554			Schraube M5x10 Screw
318198			Schraube M4x16 Screw
422869			Gew. Stift M8x8 Set screw


251554
(M5x10 DIN 921)
387463
180593
318198
(M4x16 DIN 912)
422869
(M8x8 DIN 913)

181211

MSV 54 Säule MS–A 182494
MSV 54 Column MS–A 182494

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*
182494				**SÄULE MS–A** **COLUMN MS–A** Keine Einzelteile lieferbar mit Ausnahme von No seperate parts aviable except for:
210555				Klemmband Clamping spring
210559				Klemmring Clamping ring
421827				Deckel Cover
239419				Schraube M4x10 Screw
247909				Schraube M6x8 Screw
422689				Gew. Stift M8x8 Set screw


239 419
M4x10
DIN 912
210555
210559
422869
M8×8
DIN 913
247909
M6×8
DIN913
421 825
247909
M6×8
DIN913
421 827

MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swingarm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swingarm 408477 for M690

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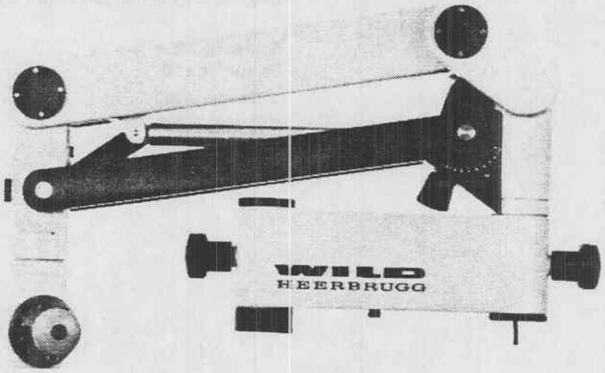
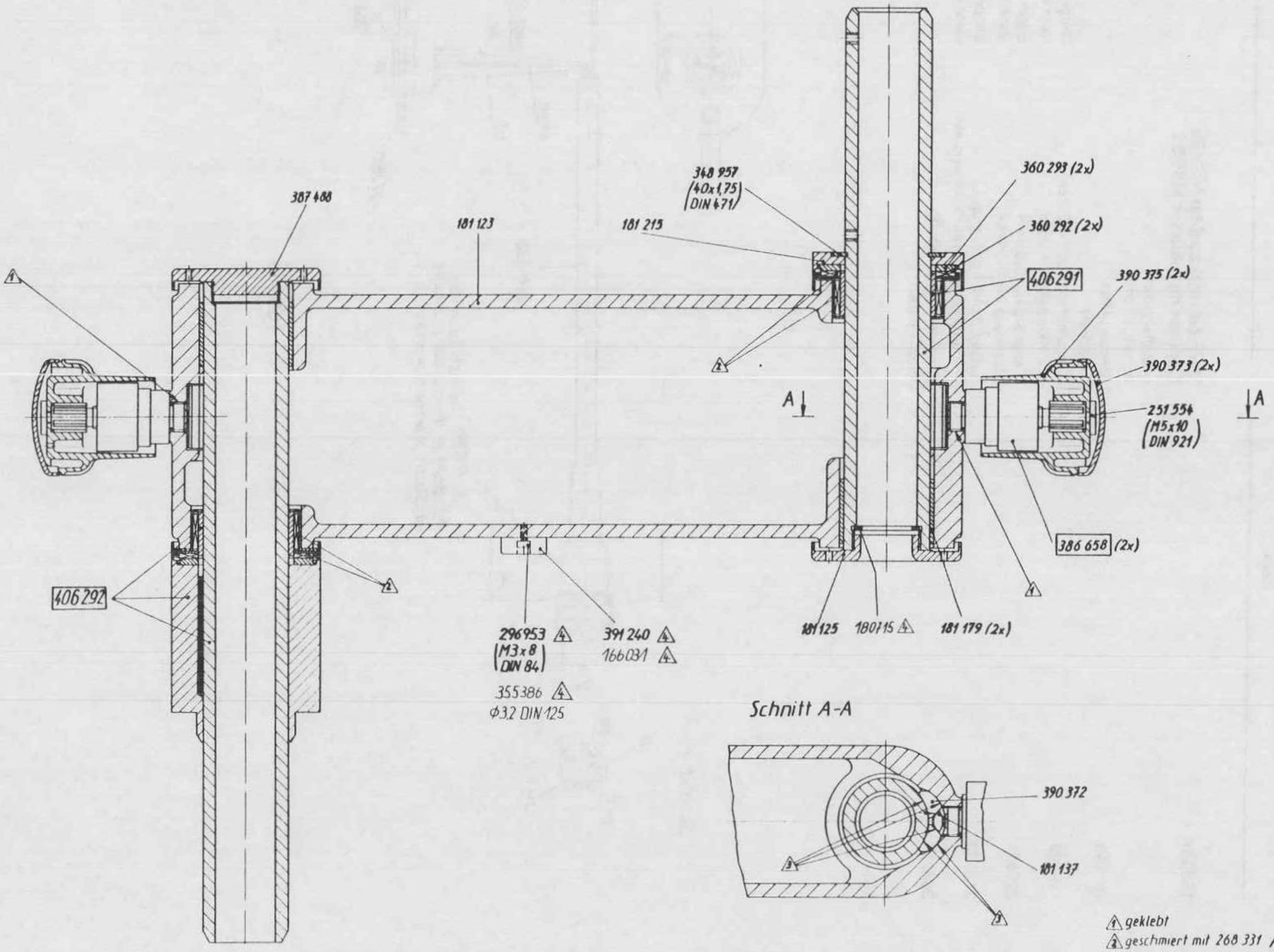
Vertikal Schwenkarm für MSV55/72 Vertical swingarm for MSV55/72	MSV55/7–MSV55/9
Schwenkarm für MSV55/72 Swingarm for MSV55/72	MSV55/10



MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung /*Bemerkungen* description / *remarks*	
181214				**Horizontal-Schwenkarm kpl. für MSV 55, MSV 72** **Horizontal swingarm assembly for MSV 55, MSV 72**	
				bestehend aus: consisting of:	
386658				Bremse kpl. Brake assembly	*siehe Seite MSV55/6* *see page MSV55/6*
181123				Horizontalarm Horizontal arm	
181125				Deckel Cover	
181137				Klemmstück Clamping piece	
181179				Trockenlager Dry bearing	
181215				Deckring Cover ring	
360292				Nadellager Needle bearing	
360293				Gegenscheibe Disk	
387488				Deckel Cover	
390372				Klemmbacke Clamping jaw	
390373				Deckscheibe schwarz Cover disk black	
390375				Bremsknopf schwarz Brake knob black	
406291				Lagerrohr mit Innenring Bearing tube with inner ring	*Keine Einzelteile lieferbar* *No separate parts available*
406292				Lagerrohr geklebt mit Innenring Bearing tube cemented with inner ring	*Keine Einzelteile lieferbar* *No separate parts available*
251554				Schraube M5x10 Screw M5x10	
348957				Sicherungsring Retaining ring	

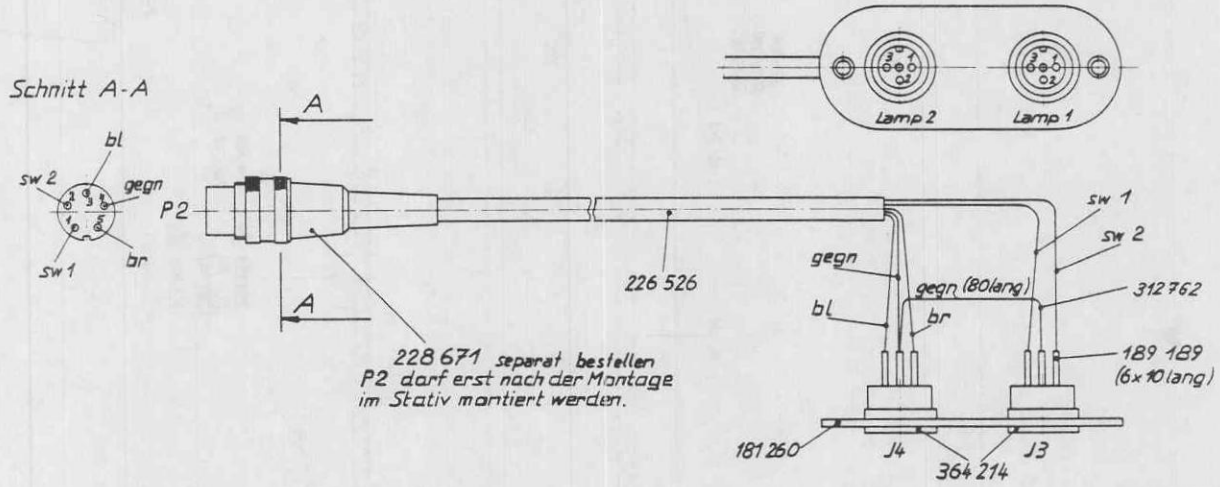
181214 HORIZONTAL SCHWENKARM FÜR MSV55, MSV72
HORIZONTALE SWINGARM FOR MSV55, MSV72


387 488
181 123
181 215
348 957 (40x1,75 DIN 471)
360 293 (2x)
360 292 (2x)
406291
390 375 (2x)
390 373 (2x)
251 554 (M5x10 DIN 921)
386 658 (2x)
△1
△2
A
A
406 292
296953 △4 (M3x8 DIN 84)
391 240 △4
166031 △4
355386 △4
ϕ3,2 DIN 125
181 125
180715 △4
181 179 (2x)
Schnitt A-A
390 372
181 137
△3

△1 geklebt
△2 geschmiert mit 268 331 Allempan Q Paste
△3 geschmiert mit 128 407 D2m
△4 siehe Seite MSV 55/10

MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
168114 *				**Verbindungskabel für MSV55** **Connecting cable for MSV55**	
				bestehend aus: consisting of:	
181260				Steckerplatte Plug plate	
189189				Schrumpfschlauch ø 6 transp. Shrink hose ø 6 transp.	*Länge angeben* *state length*
226526				Kabel 5-polig 0,5mm² Cable 5-poles 0,5mm²	*Länge angeben* *state length*
312762				Litze 0,5mm² gelb grün Flexible wire 0,5mm² yellow-green	*Länge angeben* *state length*
364214				Steckverbinder 3-polig Plug 3-poles	


Lamp 2
Lamp 1
Schnitt A-A
bl
sw 2
gegn
P2
sw 1
br
A
A
226 526
sw 1
sw 2
gegn
gegn (80lang)
312 762
bl
br
189 189
(6x10 lang)
181 260
J4
364 214
J3

228 671 separat bestellen
P2 darf erst nach der Montage
im Stativ montiert werden.

168114

---

* Ohne Stecker 228671
Without plug 228671

MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
181216				**Vertikal Schwenkarm für MSV55, MSV72** **Vertical swingarm for MSV55, MSV72** bestehend aus: consisting of:	
168114				Verbindungskabel für MSV55 Cable for MSV55	*siehe Seite MSV55/4* *see page MSV55/4*
386658				Bremse Brake	*siehe Seite MSV55/6* *see page MSV55/6*
406346				Verbindungskabel für MSV72 Cable for MSV72	*siehe Seite MSV55/5* *see page MSV55/5*
137138	186800			Druckfeder Spring	
167137	186800			Kugelgriff Handle	
181137	186800			Klemmstück Clamping piece	
181218	186800			Gasfeder für MSV55 Gas spring for MSV55	
181237	186800			Deckscheibe Disk	
181244	185800			Griff Handle	
181246	186800			Arretierbolzen Bolt	
181247	186800			Gewindebüchse Threaded bush	
181248	186800			Parallelführungsleiste rechts Parallel batten right	
181249	186800			Parallelführungsleiste links Parallel batten left	
181251	186800			Zwischenring Washer	
181253	186800			Scheibe Disk	
181255	186800			Schwenkarmlager Swingarm bearing	
181266	186800			Führungsklotz Guide	
181268	186800			Büchse Bush	
181270	186800			Büchse Bush	
181273	186800			Mutter mit Gleitbelag Nut with slide-lining	
181275	186800			Zwischenring Washer	
181278	186800			Zeiger rechts Pointer right	
181279	186800			Zeiger links Pointer left	
181281	186800			Schraube Screw	
182614	186800			Lagerflansch Flange	
191678	186800			Klemmblech Clamping sheet	
272033	186800			Deckscheibe Cover disk	
303979	186800			Trockenlager Dry bearing	

MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
360280	186800			Scheibe Disk	
363459	186800			Gleitscheibe Slide-disk	
363461	186800			Triebknopf Knob	
387471	186800			Gelenkauge Joint	
387494	186800			Haken Hook	
390345	186800			Kupplung Coupling	
390350	186800			Schraube Screw	
390351	186800			Schraube Screw	
390352	186800			Achse Axle	
390353	186800			Zyl. Stift Pin	
390354	186800			Abdeckblech Cover	
390355	186800			Flansch Flange	
390358	186800			Spindel Spindle	
390359	186800			Schwenkarm Swingarm	
390362	186800			Vertikalarm Vertical arm	
390363	186800			Lagerrohr Bearing	*für MSV55* *for MSV55*
390364	186800			Lagerrohr Bearing	
390367	186800			Achse Axle	
390368	186800			Klemmhülse Clamping sleeve	
390369	186800			Zugfeder Spring	
390370	186800			Scheibe Disk	
390372	186800			Klemmbacke Clamping jaw	
390373	186800			Deckscheibe schwarz Cover disk black	
390374	186800			Deckscheibe orange Cover disk orange	
390375	186800			Bremsknopf schwarz Brake knob black	
390376	186800			Bremsknopf orange Brake knob orange	
390377	186800			Gewindespindel Threaded spindle	
391240	186800			Kabelklemmbride Cable clip	
400296	186800			Excenterbüchse Eccentric bush	
402333	186800			Puffer Buffer	
408404	186800			Lagerrohr Bearing	*für MSV72* *for MSV72*

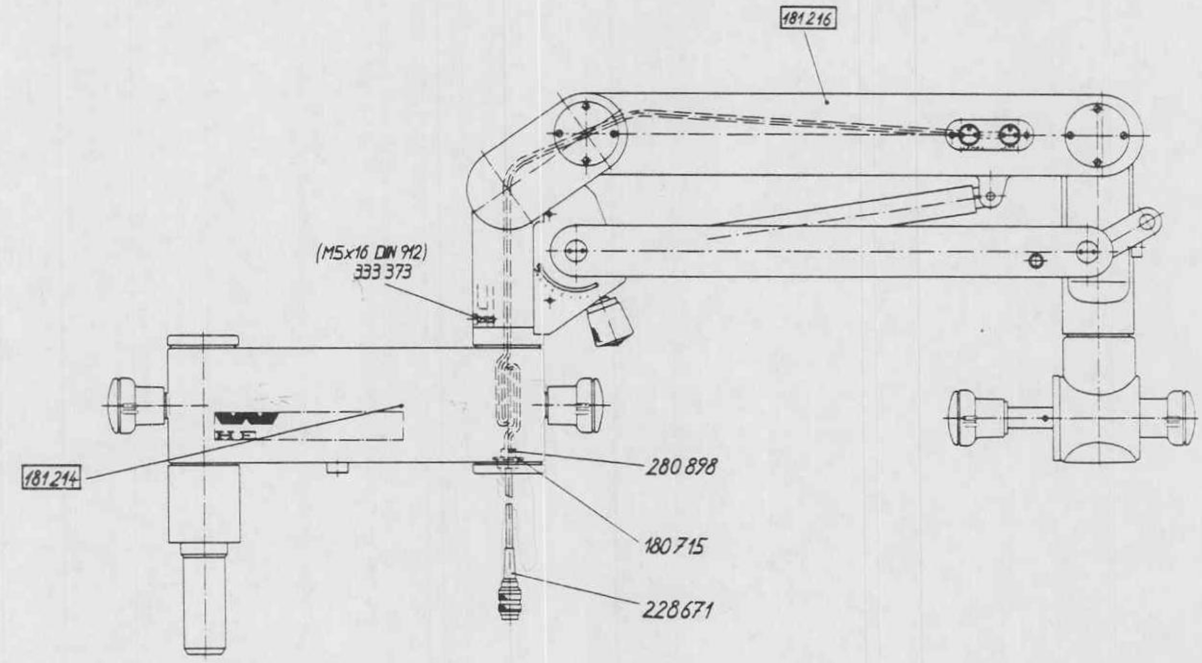
MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
408406	186800			Gasfeder Gas spring	*für MSV72* *for MSV72*
411353	186800			Gummiprofil Rubber profile	
101341	186800			Schraube M2x5 Screw	
161312	186800			Fächerscheibe ø 6,4 Serrated lock washer	
175356	186800			Schraube M3x10 Screw	
176974	186800			U/Scheibe ø 8,4 Washer	
197755	186800			Tellerfeder 15x6,2x0,5 Cup spring	
203091	186800			Zyl. Stift ø 4x10 Pin	
210298	186800			Schraube M4x8 Screw	
217635	186800			Schraube M5x20 Screw	
236658	186800			Schraube M5x12 Screw	
236767	186800			Zyl. Stift ø 8x40 Pin	
243281	186800			Sicherungsring ø 10x1 Retaining ring	
251397	186800			Sicherungsring ø 8x0,8 Retaining ring	
251554	186800			Schraube M5x10 Screw	
269697	186800			Mutter M6 Nut	
279961	186800			Schraube M5x30 Screw	
296945	186800			Schraube M4x10 Screw	
296953	186800			Schraube M3x8 Screw	
331263	186800			Schraube M3x8 Screw	
333373	186800			Schraube M5x16 Screw	
355390	186800			Schraube M8x12 Screw	
361186	186800			Gew. Stift M4x5 Set screw	
362471	186800			Gew. Stift M3x4 Set screw	
378008	186800			Schraube M6x18 Screw	
384397	186800			Gew. Stift M4x4x2 Set screw	

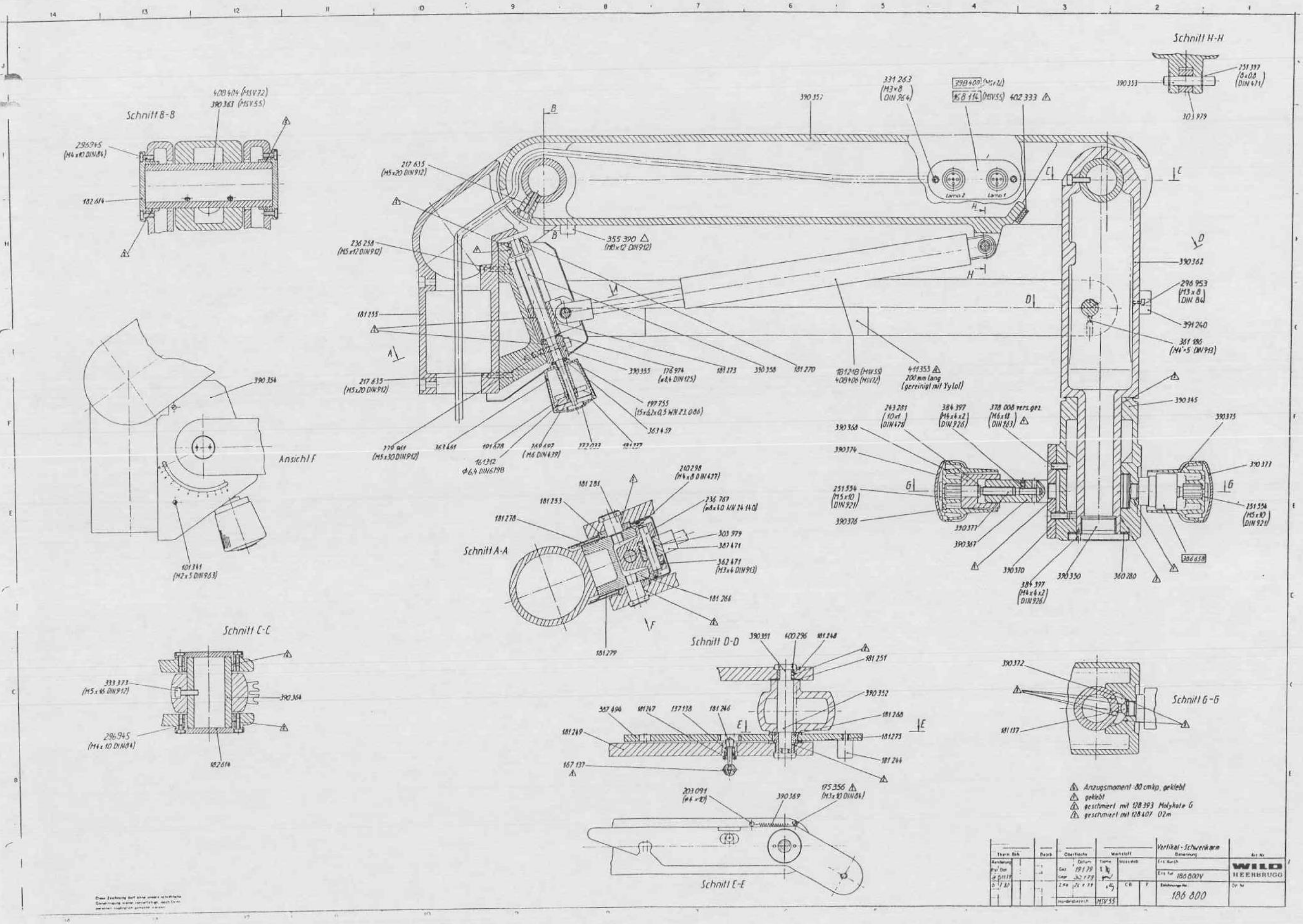
MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swingarm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swingarm 408477 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von bis valid f. instrument no. from to	Benennung / *Bemerkungen* description / *remarks*	
182500			**SCHWENKARM MSV55 FÜR M610, M630, M650** **SWINGARM MSV55 FOR M610, M630, M650**	
408477			**SCHWENKARM MSV72 FÜR M690** **SWINGARM MSV72 FOR M690**	
			bestehend aus: consisting of:	
181214	180716		Horizontal Schwenkarm Horizontal Swingarm	*siehe Seite MSV55/2* *see page MSV55/2*
181216	180716		Vertikal Schwenkarm Vertical Swingarm	*siehe Seite MSV55/7* *see page MSV55/7*
180715	180716	*für MSV55* *for MSV55*	Scheibe Disk	
280898	180716		Kabeldurchführung Cable holder	
228671	180716 168114		Stecker Plug	
391240	181214		Kabelklemmbride Cable clamp	
166031	181214	*für MSV72* *for MSV72*	Schelle Cable clamp	
189189	406346		Schrumpfschlauch transp. Shrink hose transp.	*Länge angeben* *state length*
249381	406346		Kabelbinder Plastic band	
382372	406346		Steckverbinder 15-polig Plug 15-poles	
393538	406346		Kabeldurchführung Cable holder	
393616	406346		Aufnahmeplatte Plate	
393618	406346		Steckergehäuse Plug housing	
393630	406346		Schrumpfschlauch Shrink hose	*Länge angeben* *state length*
402338	406346		Scheibe Disk	
407433			Klettenband für Kabelbefestigung Velcro tape	*Länge angeben* *state length*
411355	406346		Kabelflansch Cable flange	
296953	181214		Schraube M3x8 Screw	
333373	180716		Schraube M5x16 Screw	
355386	181214	*für MSV72* *for MSV72*	U/Scheibe ø 3,2 Washer	

MSV 55 Schwenkarm 182500 für M610, M630, M650
MSV 55 Swing arm 182500 for M610, M630, M650
MSV 72 Schwenkarm 408477 für M690
MSV 72 Swing arm 408477 for M690


181216
(M5x16 DIN 912)
333 373
181214
280 898
180 715
228 671

180716


14
13
12
11
10
9
8
7
6
5
4
3
2
1
Schnitt B-B
408 404 (MSV72)
390 363 (MSV55)
296 945
(M4 x 10 DIN 84)
182 614
Schnitt H-H
390 353
251 397
(8 x 08
DIN 471)
303 979
390 357
331 263
(M3 x 8
DIN 964)
398 400 (MSV72)
158 114 (MSV55)
402 333
Lamo 2
Lamo 1
217 635
(M5 x 20 DIN 912)
236 258
(M5 x 12 DIN 912)
355 390
(M8 x 12 DIN 912)
B
C
H
D
A
181 255
217 635
(M5 x 20 DIN 912)
390 355
176 974
(ø 8,4 DIN 125)
181 273
390 358
181 270
181 218 (MSV55)
408 406 (MSV72)
411 353
200 mm lang
(gereinigt mit Xylol)
197 755
(15 x 4,2 x 0,5 WN 23.086)
363 459
279 961
(M5 x 30 DIN 912)
363 461
101 678
161 312
ø 6,4 DIN 6798
369 497
(M6 DIN 439)
272 033
181 277
390 362
296 953
(M3 x 8
DIN 84)
391 240
361 186
(M4 x 5 DIN 913)
390 345
243 281
(10 x 1
DIN 471)
384 397
(M4 x 4 x 2
DIN 926)
378 008 vers. gez.
(M6 x 18
DIN 963)
390 368
390 374
251 554
(M5 x 10
DIN 921)
390 376
390 377
390 367
390 370
384 397
(M4 x 4 x 2
DIN 926)
390 350
360 280
386 658
390 375
390 373
G
390 354
Ansicht F
101 341
(M2 x 5 DIN 963)
Schnitt A-A
181 281
181 253
181 278
210 298
(M4 x 8 DIN 427)
236 767
(ø 8 x 40 WN 24 140)
303 979
387 471
362 471
(M3 x 4 DIN 913)
181 266
181 279
F
Schnitt C-C
333 373
(M5 x 16 DIN 912)
390 364
296 945
(M4 x 10 DIN 84)
182 614
Schnitt D-D
390 351
400 296
181 248
181 251
390 352
181 268
181 275
181 244
387 696
181 247
137 138
181 246
181 249
167 137
E
203 091
(ø 4 x 10)
390 369
175 356
(M3 x 10 DIN 84)
Schnitt E-E
390 372
181 137
Schnitt G-G

⚠ Anzugsmoment 80 cmkp, geklebt
⚠ geklebt
⚠ geschmiert mit 128 393 Molykote G
⚠ geschmiert mit 128 407 O2m

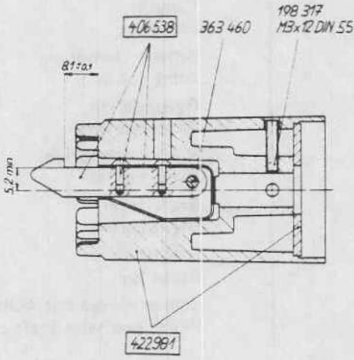
Therm. Beh.	Bearb.	Oberfläche	Werkstoff	Vertikal-Schwenkarm Benennung	Art. Nr.
Änderung Pos. Dat. a 5.11.79 b 7.80		Gez. 19.1.79 Gepr. 30.1.79 Z.Kn. 26.x.79 Normalbereich MSV 55	Massstab CB	Ers. durch Ers. für 186 800V Zeichnungs-Nr. 186 800	WILD HEERBRUGG Dr. Nr.

Diese Zeichnung darf ohne unsere schriftliche Genehmigung weder vervielfältigt, noch Drittpersonen zugänglich gemacht werden.

MSV 57 Schwenkgelenk mit Trieb 182507
MSV 57 Tiltable joint with drive 182507

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von bis valid f. instrument no. from to	Benennung / *Bemerkungen* description / *remarks*	
416623			**Nabe kompl.** **Driving collar assembly**	
			bestehend aus: consisting of:	
198317			Gew. Stift M3x12 Set screw	
363460			Lagernadel Pin	
406538			Klinke mit Biegefeder Latch with spring	*Keine Einzelteile lieferbar* *No separate parts aviable*
422981			Nabe mit Scheibe Driving collar with disk	*Keine Einzelteile lieferbar* *No separate parts aviable*

416623



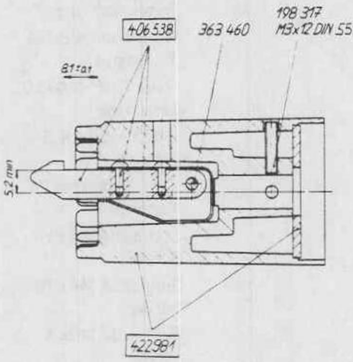
182507			**SCHWENKGELENK MIT TRIEB** **TILTABLE JOINT WITH DRIVE**	
			bestehend aus: consisting of:	
416623			Nabe kompl. Driving collar assembly	*siehe oben* *see above*
162191			Kugellager Ball bearing	
162238			Kugellager Ball bearing	
186732			Kugellager Ball bearing	
387476			Zapfen Pin	
387501			Schnecke Worm	
387542			Winkelgelenk Angle joint	
390367			Achse Shaft	
390368			Klemmhülse Clamping sleeve	
390370			Scheibe Disk	
390371			Platte Plate	
390374			Deckscheibe orange Cover disk orange	

MSV 57 Schwenkgelenk mit Trieb 182507
MSV 57 Tiltable joint with drive 182507

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
390376				Bremsknopf orange Brake knob orange	
390377				Gewindespindel Threaded spindle	
391209				Deckel Cover	
391210				Achsring Threaded sleeve	
391211				Deckel Cover	
391212				Gewindering Threaded ring	
391213				Flansch Flange	
391215				Schwenkkupplung Joint housing	
391217				Gewindering Threaded ring	
391240				Kabelklemmbride Cable holder	
402367				Bremsfeder Brake spring	
404987				Bremsbolzen Brake bolt	
424318				Schneckenrad mit Achse montiert Worm gear with shaft assembled	*Keine Einzelteile lieferbar* *No separate parts aviable*
161312				Fächerscheibe ⌀ 4,3 Serrated lock washer	
202663				Schraube M6x16 Screw	
243281				Sicherungsring ⌀ 10 Retaining ring	
246078				U/Scheibe ⌀ 4,3 Washer	
251554				Schraube M5x10 Screw	
264171				Gew. Stift M3x3 Set screw	
296953				Zyl. Schraube M3x8 Screw	
312704				Kon. Stift ⌀ 3x30 Taper pin	
318198				Schraube M4x16 Screw	
347781				Sicherungsring ⌀ 25 Retaining ring	
348954				Schraube M6x30 Screw	
372479				Kon. Stift ⌀ 4x45 Taper pin	
375922				Mutter M4 Nut	
378008				Schraube M6x18 Screw	
384326				Schraube M4x10 Screw	
384397				Gew. Stift M4x4 Set screw	
404053				Gew. Stift M4x6 Set screw	

MSV 59 Mikroskopträger neigbar mit Trieb 182508 für M610, 630, 650
MSV 59 Microscope carrier tiltable with drive 182508 for M610, 630, 650

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
416623				**Nabe kompl.** **Driving collar assembly**	
				bestehend aus: consisting of:	
198317				Gew. Stift M3x12 Set screw	
363460				Lagernadel Pin	
406538				Klinke mit Biegefeder Latch with spring	*Keine Einzelteile lieferbar* *No separate parts aviable*
422981				Nabe mit Scheibe Driving collar with disk	*Keine Einzelteile lieferbar* *No separate parts aviable*



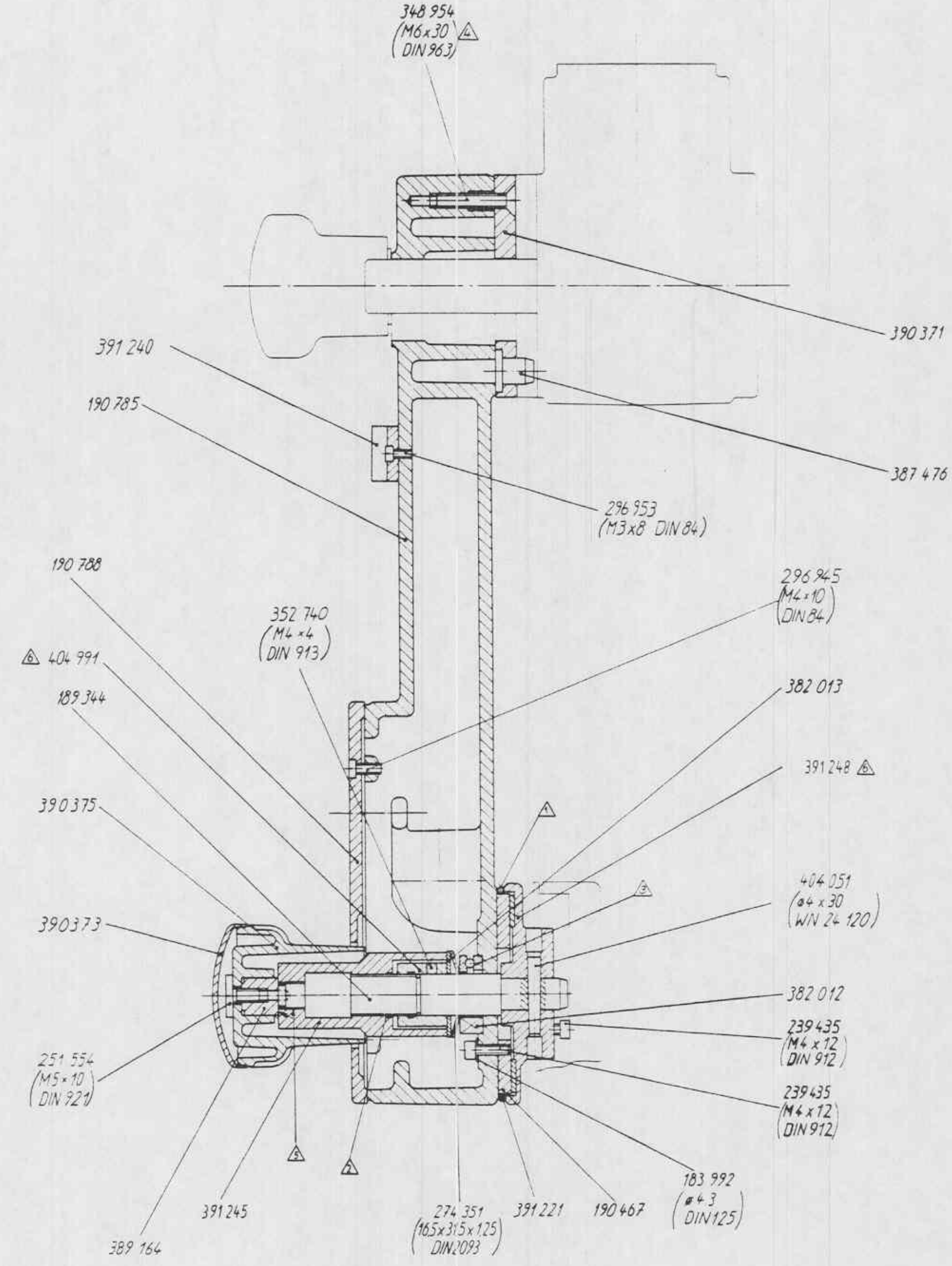
416623

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
182508				MIKROSKOPTRÄGER NEIGBAR MIT TRIEB MICROSCOPE CARRIER TILTABLE WITH DRIVE	
				bestehend aus: consisting of:	
416623				Nabe kompl. Driving collar assembly	*siehe oben* *see above*
162238				Kugellager Ball bearing	
186732				Kugellager Ball bearing	
188334				Gewindering Threaded ring	
387476				Zapfen Pin	
387501				Schnecke Worm	
390371				Platte Plate	
391209				Deckring Cover	
391210				Achsring Threaded sleeve	
391228				Flansch Flange	
391240				Kabelklemmbride Cable holder	
391251				Schneckenrad kompl. Worm gear assembly	*Keine Einzelteile lieferbar* *No separate parts aviable*

MSV 59 Mikroskopträger neigbar mit Trieb 182508 für M610, 630, 650
MSV 59 Microscope carrier tiltable with drive 182508 for M610, 630, 650

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*
391252				Anschlussflansch Flange
391253				Achse Shaft
391254				Deckel Cover
391256				Träger Arm
402363				Bremsfeder Brake spring
402364				Bremsbolzen Brake bolt
163572				Sicherungsring ϕ 15 Retaining ring
178410				Kon. Stift ϕ 3x22 Taper pin
179828				Gew. Stift M4x10 Set screw
183992				U/Scheibe ϕ 4,3 Washer
191126				Kon. Stift ϕ 4x26 Taper pin
239419				Schraube M4x10 Screw
296945				Schraube M4x10 Screw
296953				Schraube M3x8 Screw
312704				Kon Stift ϕ 3x30 Taper pin
348954				Schraube M6x30 Screw
362419				Schraube M4x12 Screw

MSV 58 MIKROSKOPTRÄGER NEIGBAR FÜR M610, M630, M690 182506
MICROSCOPE CARRIER FOR M610, M630, M690 182506


348 954 (M6x30 DIN 963) △4
390 371
391 240
190 785
387 476
296 953 (M3x8 DIN 84)
190 788
352 740 (M4 x 4 DIN 913)
296 945 (M4x10 DIN 84)
△6 404 991
189 344
382 013
391 248 △6
390 375
△1
△3
404 051 (ø4 x 30 WN 24 120)
390 373
382 012
239 435 (M4 x 12 DIN 912)
239 435 (M4 x 12 DIN 912)
251 554 (M5x10 DIN 921)
△5
△2
183 992 (ø4 3 DIN 125)
391 245
274 351 (16,5x31,5x1,25 DIN 2093)
391 221
190 467
389 164

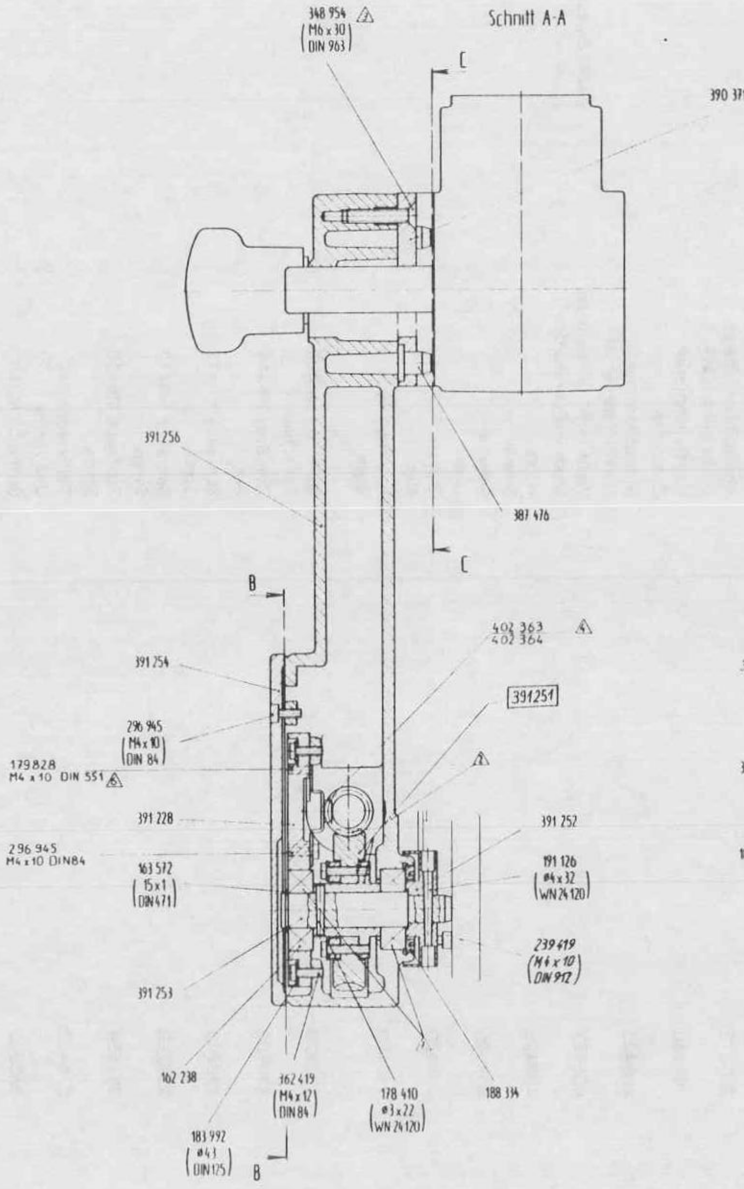
△6 Bremsmoment bei gelostem Bremsknopf
200 Ncm ± 50 Ncm

△5 geklebt

geschmiert mit

△1 278 798 (FM4) O-Ring und Flachen
△2 128 406 (V3m)
△3 128 407 (D2m) Kugellager
△4 Anzugsmoment 800 Ncm
geklebt

MSV 59 MIKROSKOPTRÄGER NEIGBAR MIT TRIEB FÜR M610, M630, M690 182508
MICROSCOPE CARRIER WITH DRIVE FOR M610, M630, M690 182508


348 954 △2
(M6 x 30
DIN 963)
Schnitt A-A
390 371
C
C
391 256
387 476
B
B
402 363
402 364 △
391 251
△
391 254
296 945
(M4 x 10
DIN 84)
179 828
M4 x 10 DIN 551 △
391 228
296 945
M4 x 10 DIN84
163 572
(15 x 1
DIN 471)
391 252
191 126
(ø4 x 32
WN 24 120)
239 419
(M4 x 10
DIN 912)
391 253
162 238
162 419
(M4 x 12
DIN 84)
178 410
(ø3 x 22
WN 24 120)
188 314
183 992
(ø4,3
DIN 125)

△1 gesichert

△2 geschmiert mit *268 319 (FM5)*

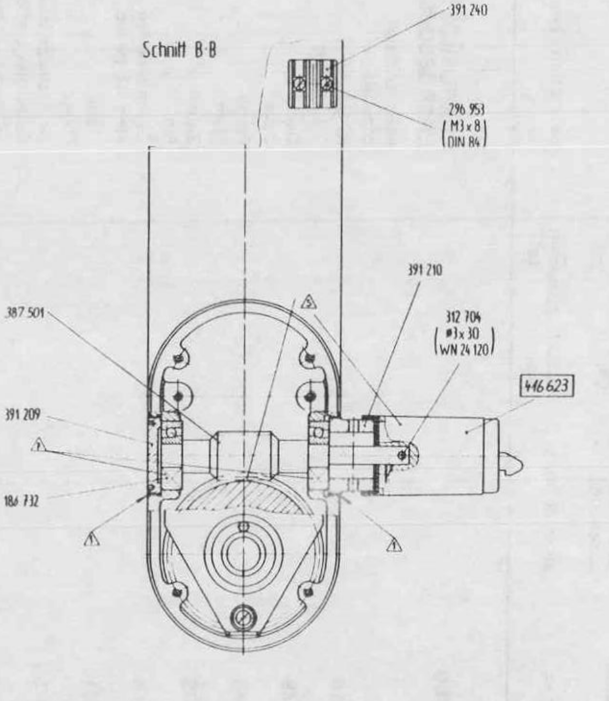
△3 Anzugsmoment: *800* Ncm, geklebt

△4 geklebt mit 328 360 nach 304 357

△5 Einstellung des Schneckenrads (ungebremst).
Drehmoment 3 10 Ncm an 180 598
(bei 1 vollen Umdrehung des Schneckenrades)

△6 Einstellung der Bremse.
Drehmoment 15 25 Ncm an 180 598
(Bei 1 vollen Umdrehung des Schneckenrads)

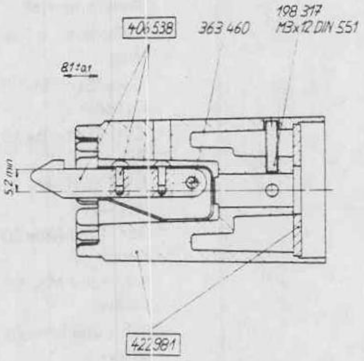
△7 *geschmiert mit 128 407 (D2m)*


Schnitt B-B
391 240
296 953
(M3 x 8
DIN 84)
391 210
312 704
(ø3 x 30
WN 24 120)
446 623
387 501
△5
391 209
△
186 732
△
△

MSV66 Mikroskopträger neigbar mit Trieb 232478 für M690
MSV66 Microscope carrier tiltable with drive 232478 for M690

Artikel-Nr.	auf Zeichnung	gültig für Instr.-Nr. von	bis	Benennung / *Bemerkungen*	
Stock no.	drawing no.	valid f. instrument no. from	to	description / *remarks*	
416623				**Nabe kompl.** **Driving collar assembly**	
				bestehend aus: consisting of:	
198317				Gew. Stift M3x12 Set screw	
363460				Lagernadel Pin	
406538				Klinke mit Biegefeder Latch with spring	*Keine Einzelteile lieferbar* *No separate parts available*
422981				Nabe mit Scheibe Driving collar with disk	*Keine Einzelteile lieferbar* *No separate parts available*

416623



Artikel-Nr.	auf Zeichnung	gültig für Instr.-Nr. von	bis	Benennung / *Bemerkungen*	
232478				**MIKROSKOPTRÄGER NEIGBAR MIT TRIEB** **MICROSCOPE CARRIER TILTABLE WITH DRIVE**	
				bestehend aus: consisting of:	
416623				Nabe kompl. Driving collar assembly	*siehe oben* *see above*
214397				Kugellager Ball bearing	
232477				Deckel Cover	
232483				Flansch Flange	
232484				Gewindering Threaded ring	
315037				Sicherungsscheibe Locking washer	
387476				Zapfen Pin	
390371				Platte Plate	
391240				Kabelklemmbride Cable clip	
407594				Schnecke Worm	
407599				Schneckenrad kompl. Worm gear assembly	*Keine Einzelteile lieferbar* *No separate parts available*
408353				Klemmhälfte Clamping piece	

WILD
HEERBRUGG

ERSATZTEILKATALOG

SPARE PARTS CATALOGUE

M650 / M650T

OPTIKTRAEGER
OPTICS CARRIER

Ausgabe / Edition 6/84
3696-Ws/soe

MSV65 Mikroskopträger neigbar 389160 für M690
MSV65 Microscope carrier tiltable 389160 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*	
389160				**MIKROSKOPTRÄGER NEIGBAR** **MICROSCOPE CARRIER TILTABLE** bestehend aus: consisting of:	
248310				Kugellager Ball bearing	
386545				Deckel Cover	
386549				Platte Plate	
387476				Zapfen Pin	
389164				Gewindezapfen Pin with thread	
390371				Platte Plate	
390373				Deckscheibe schwarz Cover disk black	
390375				Bremsknopf schwarz Brake knob black	
391240				Kabelklemmbride Cable clip	
408425				Mikroskopträger Microscope carrier	
408427				Welle mit Bremsscheibe Shaft with brake disk	*Keine Einzelteile lieferbar* *No separate parts available*
408428				Hülse Sleeve	
408429				Scheibe Disk	
408430				Mutter Nut	
410169				Lagerbüchse Bush	
178728				Gew. Stift M4x5 Set screw	
179765				Zyl. Stift ϕ 6x14 Pin	
179843				Schraube M4x12 Screw	
236258				Schraube M5x12 Screw	
251554				Schraube M5x10 Screw	
274483				Tellerfeder ϕ 40 Cup spring	
296953				Schraube M3x8 Screw	
307331				Fächerscheibe ϕ 8,4 Serratet lock washer	
309763				Schraube M3x10 Screw	
348954				Schraube M6x30 Screw	
354558				Schraube M8x60 Screw	

MSV66 Mikroskopträger neigbar mit Trieb 232478 für M690
MSV66 Microscope carrier tiltable with drive 232478 for M690

Artikel-Nr. Stock no.	auf Zeichnung drawing no.	gültig für Instr.-Nr. von valid f. instrument no. from	bis to	Benennung / *Bemerkungen* description / *remarks*
408354				Mikroskopträger Microscope carrier
408355				Bremsfeder Brake spring
408356				Bremsbolzen Brake bolt
408357				Abstimmscheibe Adjusting disk
408358				Lagerbüchse Bush
408360				Lagerbock Support
163596				Sicherungsring ø 28x1,2 Retaining ring
176064				U/Scheibe ø 6,4 Washer
176091				Gew. Stift M2x3 Set screw
176905				Zyl. Stift ø 6x18 Pin
191199				Gew. Stift M4x8 Set screw
217635				Schraube M5x20 Screw
235979				Schraube M8x55 Screw
266667				Schraube M6x20 Screw
296953				Schraube M3x8 Screw
309763				Schraube M3x10 Screw
312704				Kon. Stift 3x30 Taper. pin
348954				Schraube M6x30 Screw
362419				Schraube M4x12 Screw
374896				Schraube M4x5 Screw

ARTIKELNUMMERN-VERZEICHNIS FUER M650
ARTICLE NUMBER LIST FOR M650

Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page
110 829	6	212 134	11	358 098	10	384 650	9
124 562	9	219 857	7	360 138	5	387 256	7
126 227	6	233 062	5	361 774	2	388 103	1,9
149 597	4	236 263	12	361 778	2	388 104	1
161 304	5	239 435	4,12	363 301	10	388 105	1
161 320	7	243 211	7	363 303	10	388 106	1
162 214	9	244 156	4	363 314	10	388 107	1,9
162 222	9	247 871	7	363 315	10	388 108	11
162 224	9	248 660	7,12	363 460	3	388 109	2,9
162 527	11	251 571	5	365 045	10	388 110	2,9
162 571	5	251 684	12	365 062	10	388 111	2,9
162 576	7	264 170	5	365 085	6	388 112	3
162 964	11	272 032	9	366 000	10	388 114	4,9
163 499	5	272 033	9	366 001	10	388 115	4,9
163 539	5	282 374	5	366 101	2	388 116	5
163 583	11	288 565	12	367 830	1	398 572	4
166 748	4	288 702	1	367 841	1	398 875	4
166 756	11	296 949	6	367 892	4	399 000	7
166 977	9	303 979	10	368 517	12	400 289	5
169 608	6	306 894	2	368 518	6	404 815	7
169 702	6	307 311	12	370 558	4	404 960	5
169 863	11	309 763	12	375 784	2	406 251	5
169 913	11	311 147	12	376 137	4	406 345	3,9
170 328	11	312 704	12	376 736	5	406 538	3
175 536	5	313 655	2	376 795	5	411 320	5
175 868	11	315 020	10	376 905	10	416 623	3,9
175 872	2	315 023	1	378 001	3	416 686	5
176 077	11	316 302	12	378 031	10	420 196	6,11
176 193	1	316 859	6	382 002	4	420 351	6
176 380	11	317 367	2	382 003	4	420 352	6
177 012	3	319 448	2	382 004	4	421 799	11
177 696	1	334 799	2	382 005	10	421 800	11
177 879	1,5	334 803	2	382 006	10	422 978	3
179 144	11	336 615	6	382 007	4	422 981	3
180 605	1	339 800	4	382 008	4	423 634	6
180 606	1	339 976	4	382 009	10	423 636	6
180 607	9	339 977	4	382 010	4	423 639	6
180 744	4	339 992	4	382 145	1	423 679	6
181 158	9	339 994	1	382 149	2	423 680	6
181 166	9	339 995	4	382 151	2	424 288	9
181 168	9	343 113	10	382 153	2	424 316	11
181 178	1,6	343 114	10	384 082	10	427 413	11
183 891	11	346 938	1	384 086	10	432 164	6
186 430	7	346 940	4	384 089	10	432 165	6
191 698	9	346 944	5	384 092	10	432 169	6
191 709	9	346 975	5	384 095	2	432 171	6
195 155	9	346 999	5	384 096	1,6	432 172	7
197 483	3	350 060	12	384 098	10	432 174	7
197 485	11	354 538	12	384 530	6	432 175	7
197 733	11	355 099	2	384 608	5	432 176	7
198 317	3	355 143	2	384 609	5	432 182	11
198 957	2	355 179	1	384 617	10	432 183	11
207 793	11	356 422	10	384 620	10	432 184	11

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
388 103	**VERGROESSERUNGSWECHSLER** **MAGNIFICATION CHANGER**		**181 719**
315 023	Sicherungsscheibe Locking washer		181 719
367 830	Flansch Flange		181 719
367 841	Federbügel Spring		181 719
382 145	Rastscheibe Arresting disc		181 719
388 104	Optikträger mit Objektiven Optics carrier with objectives	Keine Einzelteile lieferbar No separate parts available	181 719
388 105	Objektiv mit Fassung Objective with mount	Keine Einzelteile lieferbar No separate parts available	181 719
388 106	Objektiv mit Fassung Objective with mount	Keine Einzelteile lieferbar No separate parts available	181 719
176 193	Schraube M2x6 Screw		181 719
288 702	Gew. Stift M2x4 Set screw		181 719
388 107	**RUECKWAND MONTIERT** **REAR COVER ASSEMBLY**	**NUR FUER M650** **FOR M650 ONLY**	
180 605	Zugfeder Spring		181 719
180 606	Zugfeder Spring		181 719
181 178	Bolzen Bolt		181 719
339 994	Schieber Slider		181 719
346 938	Rückwand genietet Rear cover riveted		181 719
355 179	Hebel Lever		181 719
384 096	Lüftungsblech Ventilating plate		181 719
177 696	U/Scheibe Ø 4,3 Washer		181 719
177 879	U/Scheibe Ø 3,2 Washer		181 719

ARTIKELNUMMERN-VERZEICHNIS FUER M650
ARTICLE NUMBER LIST FOR M650

Artikel-Nr. Stock n°	Seite Page
110 829	6
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126 227	6
149 597	4
161 304	5
161 320	7
162 214	9
162 222	9
162 224	9
162 527	11
162 571	5
162 576	7
162 964	11
163 499	5
163 539	5
163 583	11
166 748	4
166 756	11
166 977	9
169 608	6
169 702	6
169 863	11
169 913	11
170 328	11
175 536	5
175 868	11
175 872	2
176 077	11
176 193	1
176 380	11
177 012	3
177 696	1
177 879	1,5
179 144	11
180 605	1
180 606	1
180 607	9
180 744	4
181 158	9
181 166	9
181 168	9
181 178	1,6
183 891	11
186 430	7
191 698	9
191 709	9
195 155	9
197 483	3
197 485	11
197 733	11
198 317	3
198 957	2
207 793	11
212 134	11
219 857	7
233 062	5
236 263	12
239 435	4,12
243 211	7
244 156	4
247 871	7
248 660	7,12
251 571	5
251 684	12
264 170	5
272 032	9
272 033	9
282 374	5
288 565	12
288 702	1
296 949	6
303 979	10
306 894	2
307 311	12
309 763	12
311 147	12
312 704	12
313 655	2
315 020	10
315 023	1
316 302	12
316 859	6
317 367	2
319 448	2
334 799	2
334 803	2
336 615	6
339 800	4
339 976	4
339 977	4
339 992	4
339 994	1
339 995	4
343 113	10
343 114	10
346 938	1
346 940	4
346 944	5
346 975	5
346 999	5
350 060	12
354 538	12
355 099	2
355 143	2
355 179	1
356 422	10
358 098	10
360 138	5
361 774	2
361 778	2
363 301	10
363 303	10
363 314	10
363 315	10
363 460	3
365 045	10
365 062	10
365 085	6
366 000	10
366 001	10
366 101	2
367 830	1
367 841	1
367 892	4
368 517	12
368 518	6
370 558	4
375 784	2
376 137	4
376 736	5
376 795	5
376 905	10
378 001	3
378 031	10
382 002	4
382 003	4
382 004	4
382 005	10
382 006	10
382 007	4
382 008	4
382 009	10
382 010	4
382 145	1
382 149	2
382 151	2
382 153	2
384 082	10
384 086	10
384 089	10
384 092	10
384 095	2
384 096	1,6
384 098	10
384 330	6
384 608	5
384 609	5
384 617	10
384 620	10
384 650	9
387 256	7
388 103	1,9
388 104	1
388 105	1
388 106	1
388 107	1,9
388 108	11
388 109	2,9
388 110	2,9
388 111	2,9
388 112	3
388 114	4,9
388 115	4,9
388 116	5
398 572	4
398 875	4
399 000	7
400 289	5
404 815	7
404 960	5
406 251	5
406 345	3,9
406 538	3
411 320	5
416 623	3,9
416 686	5
420 196	6,11
420 351	6
420 352	6
421 799	11
421 800	11
422 978	3
422 981	3
423 634	6
423 636	6
423 639	6
423 679	6
423 680	6
424 288	9
424 316	11
427 413	11
432 164	6
432 165	6
432 169	6
432 171	6
432 172	7
432 174	7
432 175	7
432 176	7
432 182	11
432 183	11
432 184	11

Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page	Artikel-Nr. Stock n°	Seite Page
432 494	5,7						
433 267	6,9						
433 278	7						
433 742	7						

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

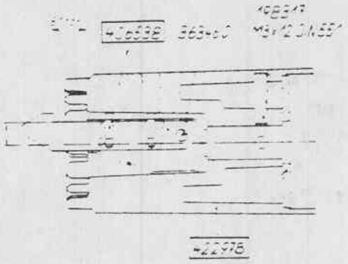
Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
388 103	**VERGROESSERUNGSWECHSLER** **MAGNIFICATION CHANGER**		**181 719**
315 023	Sicherungsscheibe Locking washer		181 719
367 830	Flansch Flange		181 719
367 841	Federbügel Spring		181 719
382 145	Rastscheibe Arresting disc		181 719
388 104	Optikträger mit Objektiven Optics carrier with objectives	Keine Einzelteile lieferbar No separate parts available	181 719
388 105	Objektiv mit Fassung Objective with mount	Keine Einzelteile lieferbar No separate parts available	181 719
388 106	Objektiv mit Fassung Objective with mount	Keine Einzelteile lieferbar No separate parts available	181 719
176 193	Schraube M2x6 Screw		181 719
288 702	Gew. Stift M2x4 Set screw		181 719
388 107	**RUECKWAND MONTIERT** **REAR COVER ASSEMBLY**	**NUR FUER M650** **FOR M650 ONLY**	
180 605	Zugfeder Spring		181 719
180 606	Zugfeder Spring		181 719
181 178	Bolzen Bolt		181 719
339 994	Schieber Slider		181 719
346 938	Rückwand genietet Rear cover riveted		181 719
355 179	Hebel Lever		181 719
384 096	Lüftungsblech Ventilating plate		181 719
177 696	U/Scheibe Ø 4,3 Washer		181 719
177 879	U/Scheibe Ø 3,2 Washer		181 719

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

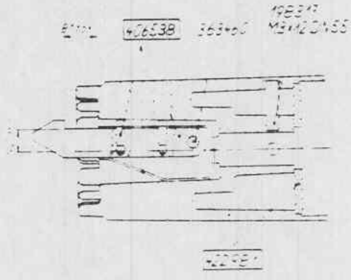
Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks	auf Zeichnung Nr. drawing n°
388 109	**WAERMESCHUTZFILTER** **HEAT ABSORPTION FILTER**	**181 719**
334 799	Buchse Bushing	181 719
334 803	Blechwinkel Bracket	181 719
375 784	Wärmeschutzfilter Heat absorption filter	181 719
175 872	Schraube M2x7 Screw	181 719
198 957	U/Scheibe Ø 2,5 Washer	181 719
388 110	**KOLLEKTOR GEFASST** **COLLECTOR ASSEMBLY**	**181 719**
355 099	Gewindering Threaded ring	181 719
355 143	Distanzring Distance ring	181 719
361 774	Distanzring Distance ring	181 719
361 778	Fassung Mount	181 719
382 149	Kollektorlinse Collector lens	181 719
382 151	Kollektorlinse Collector lens	181 719
382 153	Kollektorlinse Collector lens	181 719
388 111	**RINGSCHWALBE MONTIERT** **RING DOVETAIL ASSEMBLY**	
306 894	Blende Diaphragme	181 719
313 655	Drehknopf Knob	181 719
317 367	Drehknopfdeckel Cover for knob	181 719
319 448	Gewindebolzen Threaded bolt	181 719
366 101	Hitzeschild Heat shield	181 719
384 095	Ringschwalbe Ring dovetail	181 719

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
388 112	Kabel vormontiert	Keine Einzelteile lieferbar	181 719
	Cable assembly	No separate parts available	
177 012	Schraube M3x4		181 719
	Screw		
197 483	Schraube M3x3		181 719
	Screw		
378 001	Schraube M3x10		181 719
	Screw		
406 345	**NABE MONTIERT (BREMSE)**		**181 719**
	DRIVING COLLAR ASSEMBLY (BRAKE)		
198 317	Gew. Stift M3x12		
	Set screw		
363 460	Lagernadel		
	Pin		
406 538	Klinke mit Biegefeder	Keine Einzelteile lieferbar	
	Latch with spring	No separate parts available	
422 978	Nabe mit Scheibe	Keine Einzelteile lieferbar	
	Driving collar with disk	No separate parts available	



Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
416 623	**NABE MONTIERT**		181 719
	DRIVING COLLAR ASSEMBLY		
198 317	Gew. Stift M3x12		
	Set screw		
363 460	Lagernadel		
	Pin		
406 538	Klinke mit Biegefeder	Keine Einzelteile lieferbar	
	Latch with spring	No separate parts available	
422 981	Nabe mit Scheibe	Keine einzelteile lieferbar	
	Driving collar with disk	No separate parts available	



M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
388 114	**TRIEBKASTEN MONTIERT** **DRIVE HOUSING ASSEMBLY**		**181 719**
367 892	Dreieckstab Triangle bar		382 001
376 137	Dreieckstab Triangle bar		382 001
382 002	Schlitten Carriage		382 001
382 003	Zahnstange Rack		382 001
382 004	Führungsleiste Guiding ledge		382 001
382 007	Bolzen Bolt		382 001
382 008	Träger Support		382 001
382 010	Anschlag Stop		382 001
398 572	Führungsrolle Guiding roller		382 001
398 875	Käfig Cage		382 001
166 748	Tellerfeder Ø 4,2 Spring washer		382 001
239 435	Schraube M4x12 Screw		382 001
370 558	Schwer-Stift 2x6 Pin		382 001
388 115	**LAMPENWECHSLER MONTIERT** **LAMP CHANGER ASSEMBLY**	**NUR FUER M650** **FOR M650 ONLY**	**181 719**
149 597	Druckfeder Spring		424 317
180 744	Mutter M3 Nut		424 317
244 156	Druckfeder Spring		424 317
339 800	Schlitten Carriage		424 317
339 976	Winkel Bracket		424 317
339 977	Platte Plate		424 317
339 992	Schieber Slide		424 317
339 995	Anschlag Stop		424 317
346 940	Feder Spring		424 317

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Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
346 944	Isolationsplättchen Insulating plate		424 317
346 975	Säule Guide rod		424 317
346 999	Verbindungsstück Connecting piece		424 317
360 138	Grundplatte genietet Base plate riveted		424 317
376 736	Feder Spring		424 317
376 795	Isolierstück Insulating		424 317
384 608	Scheibe Disk		424 317
384 609	Büchse Bush		424 317
388 116	Verdrahtung vorbereitet Wiring prepared		424 317
400 289	Anschlag Stop		424 317
404 960	Bolzen Bolt		424 317
406 251	Hebel mit Rolle und Kabel Lever with roller and cable	Keine Einzelteile lieferbar No separate parts available	424 317
411 320	Isolierscheibe Insulating disk		424 317
416 686	Lampenträger montiert Lamp carrier	Keine Einzelteile lieferbar No separate parts avaialble	424 317
432 494	Klemmleiste Terminal strip		424 317
161 304	Fächerscheibe Ø 2,5 Locking washer		424 317
162 571	Schraube M2x3 Screw		424 317
163 499	U/Scheibe Ø 2,2 Washer		424 317
163 539	Mutter M2 Nut		424 317
175 536	Schraube M3x10 Screw		424 317
177 879	Sicherungsscheibe Ø 3,2 Locking washer		424 317
233 062	Tellerfeder Ø 3,2 Spring washer		424 317
251 571	Schraube M1,6x2 Screw		424 317
264 170	Schraube M2x6 Screw		424 317
282 374	Schraube M2x2,5 Screw		424 317

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Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
296 949	Schraube M2x8 Screw		424 317
316 859	Schraube M2x7 Screw		424 317
368 518	Schraube M3x18 Screw		424 317
384 330	Gew. Stift M2x2 Set screw		424 317
433 267	**ZENTRIEREINRICHTUNG MONTIERT** **CENTRING DEVICE ASSEMBLY**	**NUR FUER M650T** **FOR M650T ONLY**	
110 829	Zugfeder Spring		Seite 8 Page 8
126 227	Gleitscheibe Sliding disk		Seite 8 Page 8
169 608	Drehknopf Knob		Seite 8 Page 8
169 702	Drehknopfdeckel Cover for knob		Seite 8 Page 8
181 178	Bolzen Bolt		Seite 8 Page 8
336 615	Zugfeder Spring		Seite 8 Page 8
365 085	Rändelknopf Knob		Seite 8 Page 8
384 096	Lüftungsblech Ventilating plate		Seite 8 Page 8
420 196	Schelle Cable clamp		Seite 8 Page 8
420 351	Drehknopf Knob		Seite 8 Page 8
420 352	Drehknopfdeckel Cover for knob		Seite 8 Page 8
423 634	Lampenträger Lamp carrier		Seite 8 Page 8
423 636	Führungsleiste Guiding ledge		Seite 8 Page 8
423 639	Distanzhülse Distance sleeve		Seite 8 Page 8
423 679	Gew. Bolzen Threded bolt		Seite 8 Page 8
423 680	Gew. Bolzen Threaded bolt		Seite 8 Page 8
432 164	Klappe Hinged bow		Seite 8 Page 8
432 165	Feder Spring		Seite 8 Page 8
432 169	Rückwand Rear cover		Seite 8 Page 8
432 171	Kappe Cap		Seite 8 Page 8

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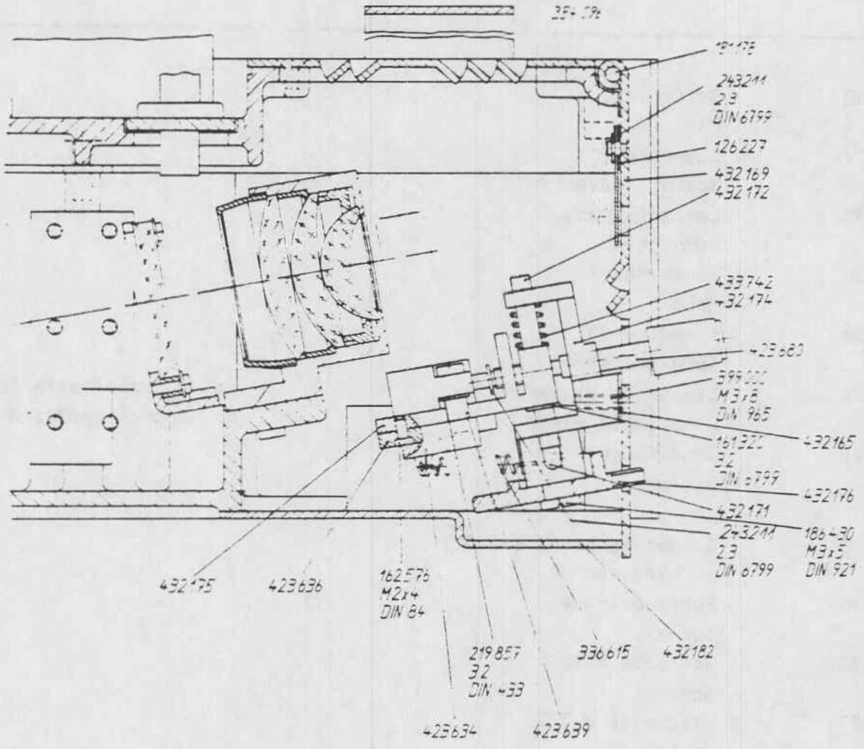
Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
432 172	Stift		Seite 8
	Pin		Page 8
432 174	Lagerbock		Seite 8
	Bearing support		Page 8
432 175	Lampenführung		Seite 8
	Lamp guide		Page 8
432 176	Rändelknopf		Seite 8
	Knob		Page 8
432 494	Klemmleiste		Seite 8
	Terminal strip		Page 8
433 278	Lampensockel verdrahtet	Keine Einzelteile lieferbar	Seite 8
	Lamp mount wired	No separate parts avallalbe	Page 8
433 742	Druckfeder		Seite 8
	Spring		Page 8
161 320	Sicherungsscheibe Ø 3,2		Seite 8
	Locking washer		Page 8
162 576	Schraube M2x4		Seite 8
	Screw		Page 8
186 430	Schraube M3x5		Seite 8
	Screw		Page 8
219 857	U/Scheibe Ø 3,2		Seite 8
	Washer		Page 8
243 211	Sicherungsscheibe Ø 2,3		Seite 8
	Locking washer		Page 8
247 871	Fächerscheibe Ø 3,2		Seite 8
	Locking washer		Page 8
248 660	6kt. Mutter M3		Seite 8
	Nut		Page 8
387 256	Zyl. Stift 1,5x6		Seite 8
	Pin		Page 8
399 000	Senkschraube M3x8		Seite 8
	Screw		Page 8
404 815	Schraube M3x12		Seite 8
	Screw		Page 8

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288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181178
243211
2,3
DIN 6799
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432169
432172
433742
432174
423680
399000
M3x8
DIN 965
161320
3,2
DIN 6799
432165
432176
432171
243211
2,3
DIN 6799
186430
M3x5
DIN 921
432175
423636
162576
M2x4
DIN 84
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432182
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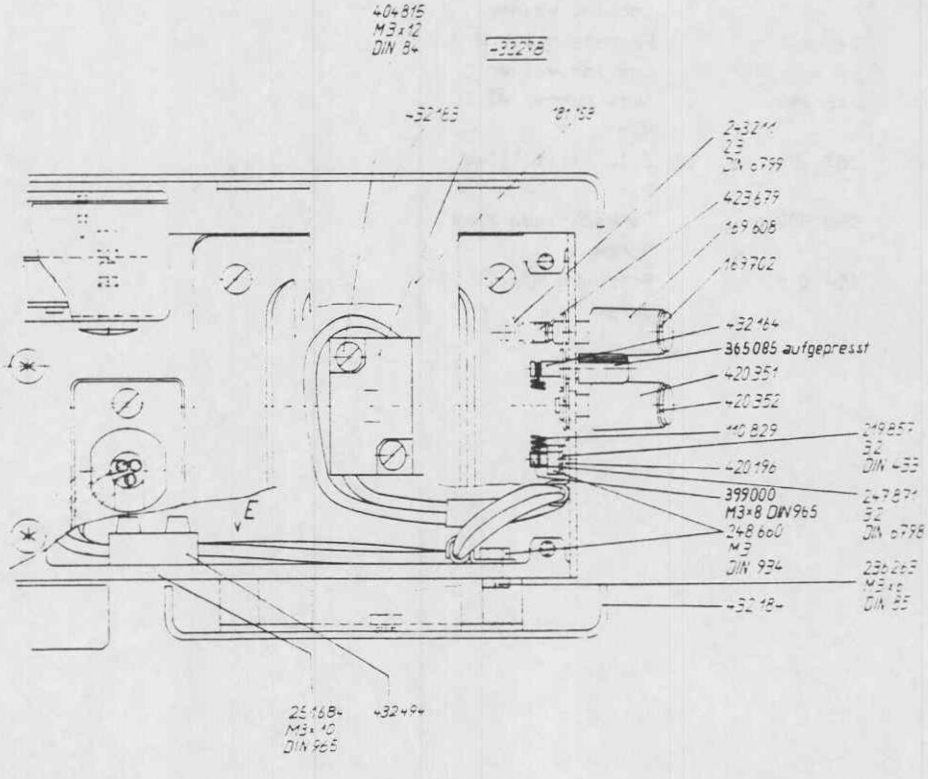
423639


404815
M3x12
DIN 84
432278
432183
181169
243211
2,3
DIN 6799
423679
169608
169702
432164
365085 aufgepresst
420351
420352
110829
420196
399000
M3x8 DIN965
248660
M3
DIN 934
219857
3,2
DIN 433
247871
3,2
DIN 6798
236263
M3x6
DIN 85
432184
E
251684
M3x10
DIN 965
432494

M650 OPTIKTRAEGER / OPTICS CARRIER 384 650
M650T OPTIKTRAEGER / OPTICS CARRIER 424 288

Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
384 650	**OPTIKTRAEGER M650** **OPTICS CARRIER M650**		
424 288	**OPTIKTRAEGER M650T** **OPTICS CARRIER M650T**		
388 103	Vergrösserungswechsler Magnification changer	siehe Seite 1 see page 1	181 719
388 107	Rückwand montiert nur für M650 Rear cover for M650 only	siehe Seite 1 see page 1	
388 109	Wärmeschutzfilter Heat absorption filter	siehe Seite 2 see page 2	181 719
388 110	Kollektor gefasst Collector assembly	siehe Seite 2 see page 2	181 719
388 111	Ringschwalbe montiert Ring dovetail	siehe Seite 2 see page 2	
388 114	Triebkasten montiert Drive housing assembly	siehe Seite 4 see page 4	181 719
388 115	Lampenwechsler montiert nur für M650 Lamp changer assembly for M650 only	siehe Seite 4 see page 4	181 719
406 345	Nabe montiert (Bremse) Driving collar (brake)	siehe Seite 3 see page 3	181 719
416 623	Nabe montiert Driving collar	siehe Seite 3 see page 3	181 719
433 267	Zentriereinrichtung montiert nur für M650T Centering device assembly for M650T only	siehe Seite 6 see page 6	
124 562	U-Scheibe Washer		181 719
162 214	Bremsscheibe Brake disc		181 719
162 222	U-Scheibe Washer		181 719
162 224	U-Scheibe Washer		181 719
166 977	Kugel Ø 2,5 Ball		181 719
180 607	Lager mit Scheibe Bearing with disc	303 979 mitbestellen order 303 979 in addition	181 719
181 158	Bügel Handle		181 719
181 166	Schutzblech nur für M650 Protective cover for M650 only		181 719
181 168	Schutzblech nur für M650 Protective cover for M650 only		181 719
191 698	Stift Pin		181 719
191 709	Blende Diaphragme		181 719
195 155	Seeger-Zackenring Locking washer		181 719
272 032	Spannzange Chuck		181 719
272 033	Deckscheibe Cover		181 719

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Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
303 979	Trockenlager Dry bearing		181 719
315 020	O-Ring O-ring		181 719
343 113	Nabe rechts Driving collar right		181 719
343 114	Nabe links Driving collar left		181 719
356 422	Kugellager Ball bearing		181 719
358 098	Mutter M3 Nut		181 719
363 301	Lager Bearing	309 979 mitbestellen order 303 979 in addition	181 719
363 303	Ritzelachse Pinion axis		181 719
363 314	6kt. Mutter M14 Hexagonal nut		181 719
363 315	Platine Plate		181 719
365 045	Lagerzapfen, Achs Ø 5 Pivot, diam. of axis 5	ersetzen durch 421 800, 421 799, 368 517 replace with 421 800, 421 799, 368 517	181 719
365 062	Geradstirnrad, Bohrung Ø 5 Spur gear, diam. of bore 5	ersetzen durch 421 799, 421 800, 368 517 replace with 421 799, 421 800, 368 517	181 719
366 000	Ritzelwelle Pinion axis		181 719
366 001	Gegenlager Opposed bearing		181 719
376 905	Sattelfeder Spring washer		181 719
378 031	Linsenschraube Screw		181 719
382 005	Schutzdeckel Protective cover		382 001
382 006	Kappe Cover		181 719
382 009	Deckplatte Cover plate		181 719
384 082	Filter Filter		181 719
384 086	Schwenkachse Axis		181 719
384 089	Filterlager Bearing		181 719
384 092	Hebel Lever		181 719
384 098	Rastfeder Arresting spring		181 719
384 617	Gehäuse Housing		181 719
384 620	Distanzbüchse Spacing bush		181 719

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Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
388 108	Beleuchtungsprisma mit Fassung Illumination prism with mount	Keine Einzelteile lieferbar No separate parts available	181 719
420 196	Schelle Cable clamp	nur für M650T for M650T only	Seite 8 page 8
421 799	Geradstirnrad, Bohrung Ø 12 Spur gear diam. of bore 12		181 719
421 800	Lagerzapfen, Achs Ø 12 Pivot, diam. of axis 12		181 719
424 316	Schutzdeckel Protective cover		181 719
427 413	Bremsmutter Brake nut		181 719
432 182	Grundplatte Plate	nur für M650T for M650T only	Seite 8 page 8
432 183	Schutzblech Protective cover	nur für M650T for M650T only	Seite 8 page 8
432 184	Schutzblech Protective cover	nur für M650T for M650T only	Seite 8 page 8
162 527	Schraube M3x6 Screw		181 719
162 964	Schraube M3x12 Screw		181 719
163 583	Sicherungsring Ø 12 Retaining ring	für 421 800 for 421 800	181 719
166 756	Tellerfeder Ø 8,2 spring washer		181 719
169 863	Heli-Coil M6 Heli-coil		181 719
169 913	Tellerfeder Ø 3,2 Spring washer		181 719
170 328	Zyl. Stift 2x5 Pin		181 719
175 868	Schraube M3x6 Screw		181 719
176 077	Schraube M3x8 Screw		181 719
176 380	Schraube M3x10 Screw		181 719
179 144	Schraube M2x4 Screw		181 719
183 891	Schraube M2x8 Screw		181 719
197 485	Schraube M3x6 Screw		181 719
197 733	Schraube M3x5 Screw		181 719
207 793	Tellerfeder Ø 8,2 Spring washer		181 719
212 134	Schraube M2x4 Screw		382 001

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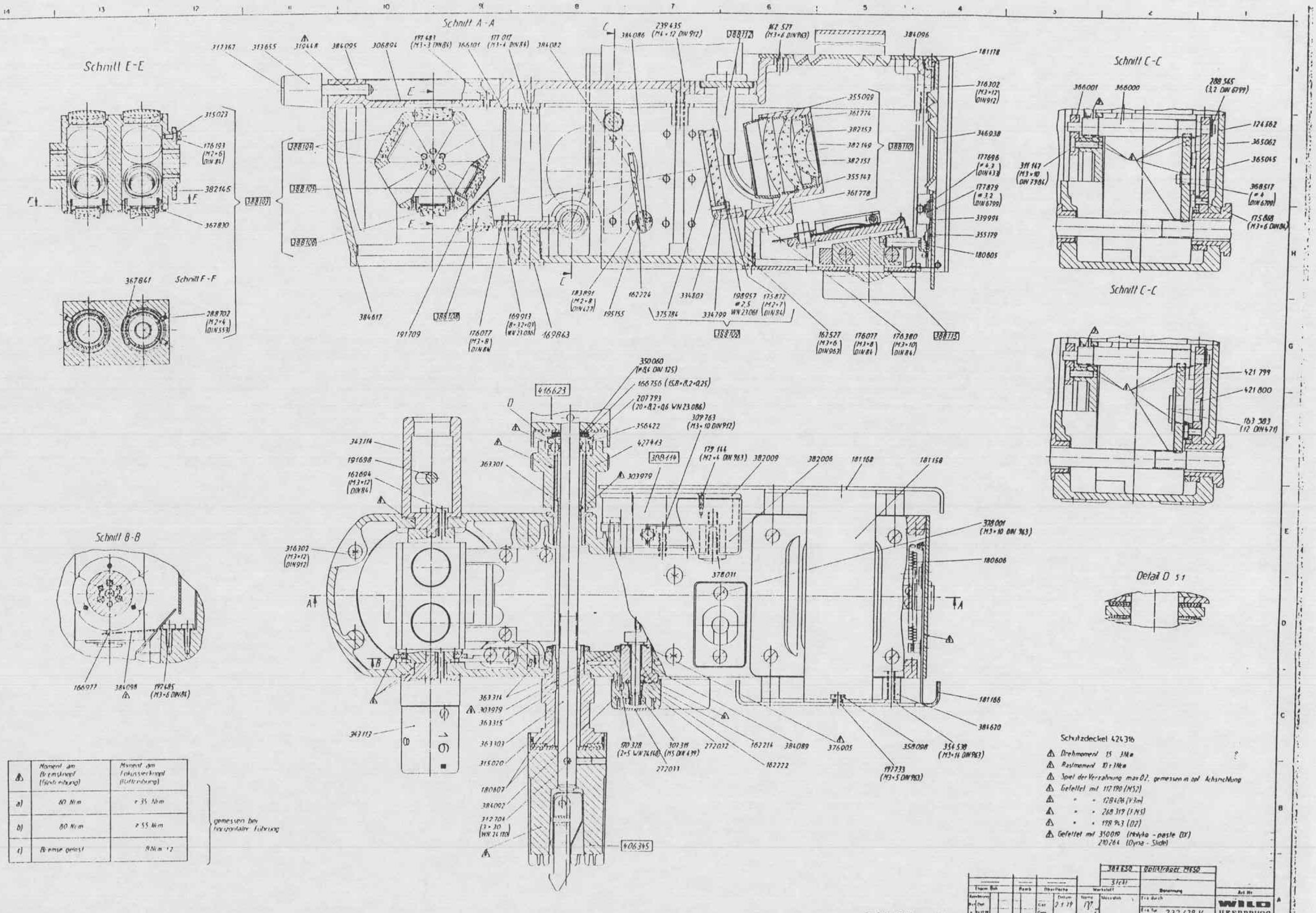
Artikel-Nr. Stock n°	Benennung/Spezifikationen/Bemerkungen description/specifications/remarks		auf Zeichnung Nr. drawing n°
236 263	Schraube M3x6 Screw	nur für M650T for M650T only	Seite 8 page 8
239 435	Schraube M4x12 Screw		181 719
248 660	6kt. Mutter M3 Nut	nur für M650T for M650T only	Seite 9 page 9
251 684	Schraube M3x10 Screw		
288 565	Sicherungsscheibe Ø 3,2 Locking washer		181 719
307 311	6kt. Mutter M5 Hexagonal nut		181 719
309 763	Schraube M3x10 Screw		181 719
311 147	Schraube M3x10 Screw		181 719
312 704	Kon. Stift 3x30 Pin		181 719
316 302	Schraube M3x12 Screw		181 719
350 060	U-Scheibe Ø 8,4 Washer		181 719
354 538	Schraube M3x8 Screw		181 719
368 517	Sicherungsring Ø 4 Retaining ring	für 365 045 for 365 045	181 719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Schnitt E-E
Schnitt F-F
Schnitt C-C
Schnitt C-C
Schnitt B-B
Detail D 5:1
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313655
319448
384095
306894
197483 (M3×3 DIN 84)
366101
171017 (M3×4 DIN 84)
384082
384086
239435 (M6×12 DIN 912)
388112
162527 (M3×6 DIN 963)
384096
181178
316302 (M3×12 DIN 912)
355099
361774
382153
382149
382151
355143
361778
388110
346938
177696 (⌀4,3 DIN 433)
177879 (⌀3,2 DIN 6799)
339994
355179
180605
315073
176193 (M2×6 DIN 84)
382145
367830
388104
388105
388107
388106
367841
288702 (M2×4 DIN 553)
384617
191709
388108
176077 (M3×8 DIN 84)
169913 (8×3,2×0,1 WN 23.086)
169863
183891 (M2×8 DIN 427)
195155
162224
334803
375784
198957 ⌀2,5 WN 23.061
175872 (M2×7 DIN 84)
334799
388109
162527 (M3×6 DIN 963)
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388115
366001
366000
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124382
365062
365045
311147 (M3×10 DIN 7984)
368517 (⌀4 DIN 6799)
175868 (M3×6 DIN 84)
421799
421800
163583 (12 DIN 471)
350060 (⌀8,4 DIN 125)
166756 (15,8×8,2×0,25)
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427443
416623
308114
303979
179144 (M2×4 DIN 963)
382009
382006
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191698
162694 (M3×12 DIN 84)
363301
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378001 (M3×10 DIN 963)
180606
378011
166977
384098
197485 (M3×6 DIN 84)
363314
303979
363315
363303
315020
180607
384002
312704 (3×30 WN 24.170)
406345
343113
170328 (2×5 WN 24.148)
307311 (M5 DIN 439)
272032
272033
162216
384089
162222
376005
197733 (M3×5 DIN 963)
358098
354538 (M3×14 DIN 963)
384620
181166
A
B
C
D
E
F

⚠	Moment am Bremsknopf (Grobtrieb)	Moment am Fokussierknopf (Feintrieb)
a)	60 Ncm	≈ 35 Ncm
b)	80 Ncm	≈ 55 Ncm
c)	Bremse gelöst	8 Ncm ±2

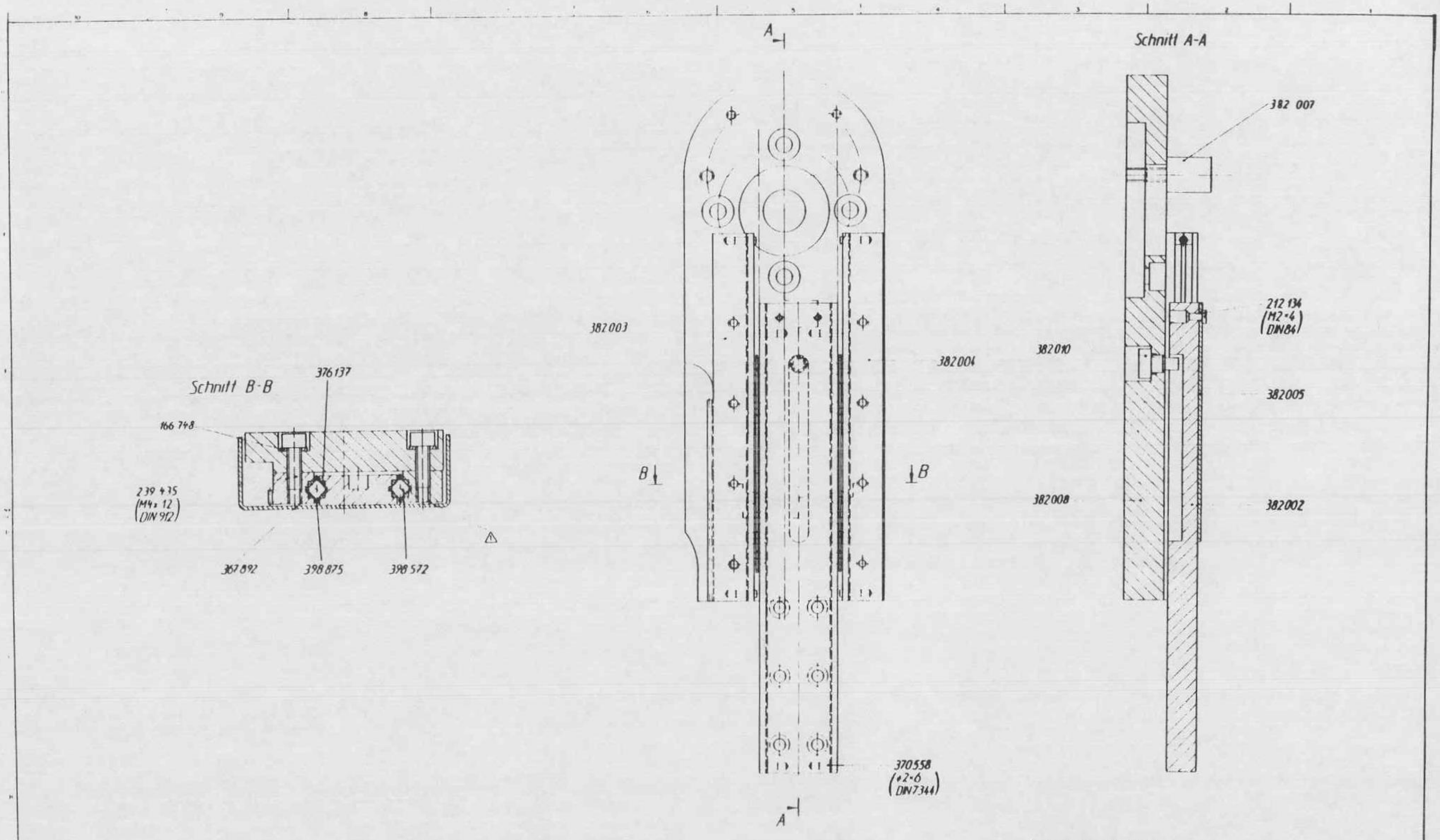
} gemessen bei horizontaler Führung

Schutzdeckel 424316

⚠ Drehmoment 15 ±3 Ncm
⚠ Rastmoment 10 ± 3 Ncm
⚠ Spiel der Verzahnung max 0,2, gemessen in opt. Achsrichtung
⚠ Gefettet mit 117 190 (M52)
⚠ " " 178 406 (V 3m)
⚠ " " 268 319 (F M5)
⚠ " " 198 943 (02)
⚠ Gefettet mit 350 019 (Molyko - paste DX)
210 264 (Dyna - Slide)

384 650	Optikträger M650
Stck	Benennung
Werkstoff	
Oberfläche	Ersatz durch
Datum Gez 2.1.79	Ersatz für 232 429 V
10.1.79	Zeichnungs-Nr. 181719
Handelsbereich M650	

WILD HEERBRUGG

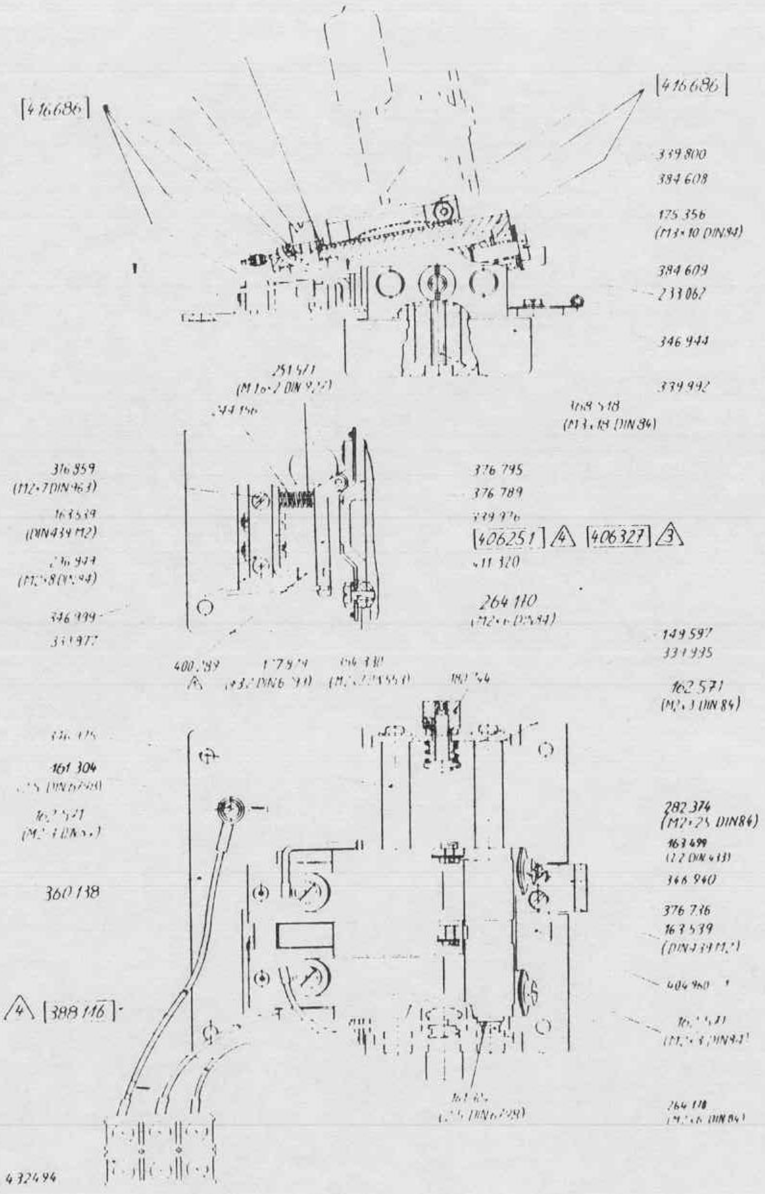

Schnitt A-A
A
A
382 007
212 134
(M2×4
DIN84)
382010
382005
382008
382002
382003
382004
B
B
Schnitt B-B
376137
166 748
239 435
(M4×12
DIN 912)
367 892
398 875
398 572
370558
(⌀2×6
DIN7344)

Ansicht ohne 382005

⚠ Laufbahnen gefettet mit
(0.?) 198 943

Triebkasten
Benennung
Werkstoff
Oberfläche
Bearb.
Änderung
A 8.12.77
-7 9.11.79
Datum
Gez 6.10.77
Gepr.
12.10.77
Name
Massstab
Ers. durch
Ers. für 382 001 V
Zchg Nr
Art. Nr
WILD HEERBRUGG

Diese Zeichnung darf ohne unsere schriftliche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384 609
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346 944
339 992
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368 518
(M3×18 DIN84)
316 859
(M2×7 DIN963)
163 539
(DIN439 M2)
346 944
(M2×8 DIN84)
346 999
339 977
376 795
376 789
339 976
[406251] 4 [406327] 3
411 320
264 110
(M2×6 DIN84)
149 597
339 935
400 189
162 571
(M2×3 DIN 84)
161 304
(2,5 DIN6799)
360 138
282 374
(M2×25 DIN84)
163 499
(2,2 DIN433)
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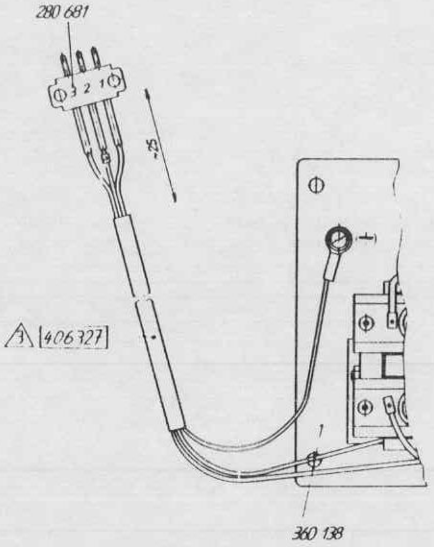
280 681
3 2 1
25
3 [406327]
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360 138

1 geklebt

2 gefettet mit (MS2) 112 190

Diese Zeichnung darf ohne unsere schriftliche Genehmigung weder vervielfältigt noch Dritten personen zugänglich gemacht werden

424 317